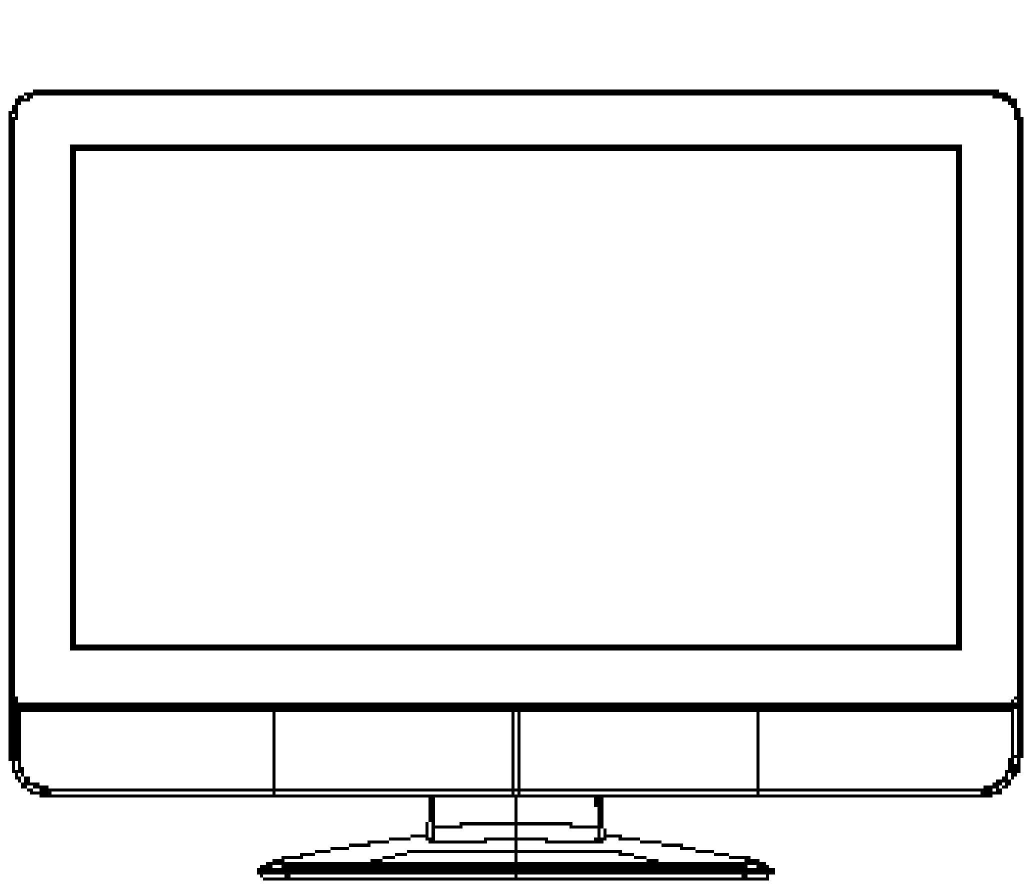
Service Manual



Model #: VIZIO VW46L
FHDTV10A_MT5382_AUO

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FCC INFORMATION
This equipment has been tested and found to comply with the limits of a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that the interference will not occur in a particular installation. If this equipment does cause unacceptable interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures -- reorient or relocate the receiving antenna; increase the separation between equipment and receiver; or connect the into an outlet on a circuit different from that to which the receiver is connected.

FCC WARNING
To assure continued FCC compliance, the user must use a grounded power supply cord and the provided shielded video interface cable with bonded ferrite cores. Also, any unauthorized changes or modifications to Amtrak products will void the user’s authority to operate this device. Thus VINC Will not be held responsible for the product and its safety.

CE CERTIFICATION
This device complies with the requirements of the EEC directive 89/336/EEC with regard to “Electromagnetic compatibility.”

SAFETY CAUTION
Use a power cable that is properly grounded. Always use the AC cords as follows – USA (UL); Canada (CSA); Germany (VDE); Switzerland (SEV); Britain (BASEC/BS); Japan (Electric Appliance Control Act); or an AC cord that meets the local safety standards.

Chapter 1 Features

1. Built in TV channel selector for TV viewing
2. Simultaneous display of PC and TV images
3. Connectable to PC's analog RGB port
4. Built in HDTV, composite video, S-Video ,HDMI ,ATV out and DTV out ,Audio line out, Audio optical out
5. Built in auto adjust function for automatic adjument of screen display
6. Smoothing function enables display of smooth texts and graphics even if image with resolution lower than 1920x1080 is magnified
7. Power saving to reduce consumption power too less than 3W
8. On Screen Display: user can define display mode (i.e. color, brightness, contrast, sharpness, backlight), sound setting, TV channel program, aspect and gamma or reset all setting.

Chapter 2 Specification

1. TFT LCD CHARACTERISTICS

46.0"WUXGA TFT LCD

Item	Specification
Active Screen Size	46 inch diagonal
Outline Dimension	1083.0(H) x 627.0 (V) x 50.6 mm(D) (Typ.)
Pixel Pitch	0.53025 mm
Pixel Format	1920 horiz. by 1080 vert. Pixels, RGB stripe arrangement
Color Depth	8-bit, 16.7 M colors
Luminance, White	550 cd/m2 (Center 1point ,Typ.)
Viewing Angle (CR>10)	Viewing angle free (R/L 178 (Typ.), U/D 178 (Typ.))
Power Consumption	Total 320W (MAX.)
Weight	16.5 Kg (Typ.)
Display Mode	Transmissive mode, Normally black
Surface Treatment	Hard coating(3H), Anti-glare treatment of the front polarizer

2.Input Connectors

Service port (USB) , HDMIX3, RCA (DVI Audio IN),D-SUB15PIN (MINI, 3rows), RCAX2 (Component), RCAX2 (Audio IN) , RCAX1 (Audio IN), RCA (Composite) , S-Video (Composite), Tuner

3.Output Connectors

SPDIF Out (Optical Audio) , RCA (Audio OUT)

4. Power Supply

Power Consumption: 320W MAX
Power OFF: to less than 0.6W MAX

5.Speaker

Output 6Ω/10W (max) X2

6. ENVIRONMENT

Operating Temperature: 5c~35c (Ambient)
Operating Humidity: Ta= 35 °C, 90%RH (Non-condensing)
Operating Altitude: 0 - 14,000 feet (Non-Operating)

7. Dimensions (Physical dimension)

	With Base	Without Base
a. Height	773mm	744.5mm
b. Width	1123mm	1123mm
c. Depth	245mm	99.5mm

8. Weight (Physical weight)

a. Net	27.81 kgs
b. Gross	34.11 kgs

9. Precautions

Please pay attention to the followings when you use this TFT LCDmodule.

9-1. Mounting Precautions

(1) You must mount a module using holes arranged in four cornersor four sides.

(2) You should consider the mounting structure so that uneven force (ex. Twisted stress) is not applied to the module. And the case on which a module is mounted should have sufficient strength so that external force is not transmitted directly to the module.

(3) Please attach the surface transparent protective plate to the surface in order to protect the polarizer. Transparent protective plate should have sufficient strength in order to the resist external force.

(4) You should adopt radiation structure to satisfy the temperature specification.

(5) Acetic acid type and chlorine type materials for the cover case are not desirable because the former generates corrosive gas of attacking the polarizer at high temperature and the latter causes circuit break by electro-chemical reaction.

(6) Do not touch, push or rub the exposed polarizers with glass,tweezers or anything harder than HB pencil lead. And please do not rub with dust clothes with chemical treatment. Do not touch the surface of polarizer for bare hand or greasy cloth.(Some cosmetics are detrimental to the polarizer.)

(7) When the surface becomes dusty, please wipe gently with absorbent cotton or other soft materials like chamois soaks with petroleum benzine. Normal-hexane is recommended for cleaning the adhesives used to attach front / rear polarizers. Do not use acetone, toluene and alcohol because they cause chemical damage to the polarizer.

(8) Wipe off saliva or water drops as soon as possible. Their long time contact with polarizer causes deformations and color fading.

(9) Do not open the case because inside circuits do not have sufficient strength.

9-2. Operating Precautions

(1) The spike noise causes the mis-operation of circuits. It should be lower than following voltage:
V=±200mV(Over and under shoot voltage)

(2) Response time depends on the temperature.(In lower temperature, it becomes longer.)

(3) Brightness depends on the temperature. (In lower temperature, it becomes lower.) And in lower temperature, response time(required time that brightness is stable after turned on) becomes longer.

(4) Be careful for condensation at sudden temperature change. Condensation makes damage to polarizer or electrical contacted parts. And after fading condensation, smearor spot will occur.

(5) When fixed patterns are displayed for a long time, remnant image is likely to occur.

(6) Module has high frequency circuits. Sufficient suppression to the electromagnetic interference shall be done by system manufacturers. Grounding and shielding methods may be important to minimized the interference.

(7) Please do not give any mechanical and/or acoustical impact to LCM. Otherwise, LCM can’t be operated its full characteristics perfectly.

(8) A screw which is fastened up the steels should be a machine screw. (if not, it causes metallic foreign material and deal LCM afatal blow)

(9) Please do not set LCD on its edge.

9-3. Electrostatic Discharge Control

Since a module is composed of electronic circuits, it is not strong to electrostatic discharge. Make certain that treatment persons are connected to ground through wrist band etc. And don’t touch interface pin directly.

9-4. Precautions for Strong Light Exposure

Strong light exposure causes degradation of polarizer and color filter.

9-5. Storage

When storing modules as spares for a long time, the following precautions are necessary.

(1) Store them in a dark place. Do not expose the module to sunlight or fluorescent light. Keep the temperature between 5°C and 35°C at normal humidity.

(2) The polarizer surface should not come in contact with any other object. It is recommended that they be stored in the container in which they were shipped.

9-6. Handling Precautions for Protection Film

(1) The protection film is attached to the bezel with a small masking tape. When the protection film is peeled off, static electricity is generated between the film and polarizer. This should be peeled off slowly and carefully by people who are electrically grounded and with well ion- blown equipment or in such a condition, etc.

(2) When the module with protection film attached is stored for a long time, sometimes there remains a very small amount of glue still on the bezel after the protection film is peeled off.

(3) You can remove the glue easily. When the glue remains on thebezel surface or its vestige is recognized, please wipe them off with absorbent cotton waste or other soft material like chamois soaked with normal-hexane.

Chapter 3　On Screen Display

Main unit button

Power

MENU

CH ▲

CH ▼

VOL +

VOL -

Input

On Screen Display

TV Source

A. Picture：

- a. Picture Mode (Custom/ Standard / Movie / Game)
- b. Backlight (0~100)
- c. Brightness (0~100)
- d. Contrast (0~100)
- e. Color (0~100)
- f. Tint (-32~32)
- g. Sharpness (0~7)
- h. Color Temperature (Custom/Cool/Normal/Warm)
  - h-1. Custom： Red (0~255)
    Green (0~255)
    Blue (0~255)
- i. Advanced Video
  - i-1. DNR(Off/Low/Medium/Strong)
  - i-2. Black Level Extender (On/Off)
  - i-3. White Peak Limiter (On/Off)
  - i-4 CTI(Off/Low/Medium/Strong)
  - i-5 Flesh Tone (On/Off)
  - i-6 Adaptive Luma (On/Off)

B. Audio：

a. Volume (0~100)
b. Bass (0~100)
c. Treble (0~100)
d. Balance (-50~50)
e. Surround (On/Off)
f. Digital Audio Out (Off/Dolby Digital/PCM)
g. Speakers (On/Off)
h. Lip Sync (0~5)

C. TV：

a. Tuner Mode (Antenna/Cable)
b. Auto Search
c. Skip Channel (Cable 1~135 / Antenna 2~69)
d. MTS (Stereo/SAP/Mono)
e. Time Zone (Hawaii/Eastern/Indiana/Central/Mountain/Arizona/Pacific/Alaska)
f. Daylight Saving (On/Off)

D. Setup：

a. Language (English/Francais/Espanol)
b. Sleep Timer (Off/30 Minutes/60 Minutes /90 Minutes /120 Minutes)
c. Wide (Wide/Zoom/Panoramic/Normal)
d. Input Naming (AV/Comp1/Comp2/RGB/HDMI1/ HDMI2/ HDMI3)
e. CC (Off/CC1/ CC2/ CC3/ CC4)
f. CC On Mute (Off/On)
g. Digital CC Style
    g-1. Caption Style (Custom/As Broadcaster) Custom
    g-2. Font Size (Large/Small/Medium)
    g-3. Font Color (white/Green/Blue/Red/Cyan/Yellow/Magenta/Black)
    g-4. Font Opacity (Translucent/solid/Transparent)
    g-5. Background Color (white/Green/Blue/Red/Cyan/Yellow/Magenta/Black)
    g-6. Background Opacity (Translucent/solid/Transparent)
    g-7. Window Color (white/Green/Blue/Red/Cyan/Yellow/Magenta/Black)
    g-8. Window Opacity (Translucent/solid/Transparent)

- h. H/V Position
  - h-1. H.Position (0~64)
  - h-2. V.Position (0~32)
  - h-3. H.Size (0~100)
  - h-4. V.Size (0~100)
- i. Reset All Setting

E. Parental：

- a. PASSWORD

RGB Mode

A. Picture：

- a. Auto Adjust (Run)
- b. Backlight (0~100)
- c. Brightness (0~100)
- d. Contrast (0~100)
- e. Color Temperature(Custom/6500/9300)
  - e-1. Custom：Red (0~255)
    Green (0~255)
    Blue (0~255)
- f. H-size (0~255)
- g. H-Position (0~100)
- h. V-Position (0~100)
- i. Fine Tune (0~31)

B. Audio：

- a. Volume (0~100)
- b. Bass (0~100)
- c. Treble (0~100)
- d. Balance (-50~50)
- e. Surround (On/Off)
- f. Digital Audio Out (Off/Dolby Digital/PCM)
- g. Speakers (On/Off)
- h. Lip Sync (0~5)

C. Setup：

- a. Language (English/Francais/Espanol)
- b. Sleep Timer (Off/30 Minutes/60 Minutes /90 Minutes /120 Minutes)
- c. Wide (Wide/Zoom/Panoramic/Normal)
- d. Input Naming (AV/Comp1/Comp2/RGB/HDMI1/ HDMI2/ HDMI3)
- e. Reset All Setting

HDMI MODE

A. Picture：

- a. Picture Mode (Custom/ Standard / Movie / Game)
- b. Backlight (0~100)
- c. Brightness (0~100)
- d. Contrast (0~100)
- e. Color (0~100)
- f. Tint (-32~32)
- g. Sharpness (0~7)
- h. Color Temperature (Custom/Cool/Normal/Warm)
  - h-1. Custom：Red (0~255)
    Green (0~255)
    Blue (0~255)
- i. Advanced Video
  - i-1. DNR(Off/Low/Medium/Strong)
  - i-2. Black Level Extender (On/Off)
  - i-3. White Peak Limiter (On/Off)
  - i-4 CTI(Off/Low/Medium/Strong)
  - i-5 Flesh Tone (On/Off)
  - i-6 Adaptive Luma (On/Off)

B. Audio：

a. Volume (0~100)
b. Bass (0~100)
c. Treble (0~100)
d. Balance (-50~50)
e. Surround (On/Off)
f. Digital Audio Out (Off/Dolby Digital/PCM)
g. Speakers (On/Off)
h. Lip Sync (0~5)

C. Setup：

a. Language (English/Francais/Espanol)
b. Sleep Timer (Off/30 Minutes/60 Minutes /90 Minutes /120 Minutes)
c. Wide (Wide/Zoom/Panoramic/Normal)
d. Input Naming (AV/Comp1/Comp2/RGB/HDMI1/ HDMI2/ HDMI3)
e. H/V Position
    e-1. H.Position (0~64)
    e-2. V.Position (0~32)
    e-3. H.Size (0~100)
    e-4. V.Size (0~100)
f. Reset All Setting

Video Sources：

AV1、AV2、COMPONENT1、COMPONENT2

A. Picture：

a. Picture Mode (Custom/ Standard / Movie / Game)
b. Backlight (0~100)
c. Brightness (0~100)
d. Contrast (0~100)
e. Color (0~100)
f. Tint (-32~32)
g. Sharpness (0~100)
h. Color Temperature (Custom/Cool/Normal/Warm)
    h-1. Custom： Red (0~255)

        Green (0~255)
        Blue (0~255)

- i. Advanced Video
  - i-1. DNR(Off/Low/Medium/Strong)
  - i-2. Black Level Extender (On/Off)
  - i-3. White Peak Limiter (On/Off)
  - i-4 CTI(Off/Low/Medium/Strong)
  - i-5 Flesh Tone (On/Off)
  - i-6 Adaptive Luma (On/Off)

B. Audio：

- a. Volume (0~100)
- b. Bass (0~100)
- c. Treble (0~100)
- d. Balance (-50~50)
- e. Surround (On/Off)
- f. Digital Audio Out (Off/Dolby Digital/PCM)
- g. Speakers (On/Off)
- h. Lip Sync (0~5)

C. Setup：

- a. Language (English/Francais/Espanol)
- b. Sleep Timer (Off/30 Minutes/60 Minutes /90 Minutes /120 Minutes)
- c. Wide (Wide/Zoom/Panoramic/Normal)
- d. Input Naming (AV/Comp1/Comp2/RGB/HDMI1/ HDMI2/ HDMI3)
- e. CC (Off/CC1/ CC2/ CC3/ CC4)
- f. CC On Mute (Off/On)
- g. Digital CC Style
  - g-1. Caption Style (Custom/As Broadcaster)Custom
  - g-2. Font Size (Large/Small/Medium)
  - g-3. Font Color (white/Green/Blue/Red/Cyan/Yellow/Magenta/Black)
  - g-4. Font Opacity (Translucent/solid/Transparent)
  - g-5. Background Color (white/Green/Blue/Red/Cyan/Yellow/Magenta/Black)
  - g-6. Background Opacity (Translucent/solid/Transparent)
  - g-7. Window Color (white/Green/Blue/Red/Cyan/Yellow/Magenta/Black)

    - g-8. Window Opacity (Translucent/solid/Transparent)
- h. H/V Position
    - h-1. H.Position (0~64)
    - h-2. V.Position (0~32)
    - h-3. H.Size (0~100)
    - h-4. V.Size (0~100)
- i. Reset All Setting

D. Parental：

- a. PASSWORD

Chapter4 Factory preset timings

This timing chart is already preset for the TFT LCD analog & digital display monitors.

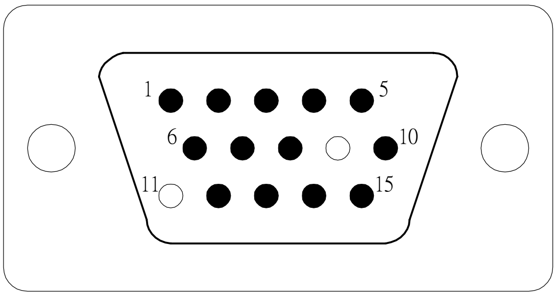
Resolution	Refresh Rate (Hz)	Horizontal Frequency (KHz)	Vertical Frequency (Hz)	Horizontal Sync Polarity (TTL)	Vertical Sync Polarity (TTL)	Pixel Rate (MHz)	Remark
640x480	60	31.5	59.94	N	N	25.175	Windows
640X480	72	37.9	72.809	N	N	31.500	Windows
640x480	75	37.5	75.00	N	N	31.500	Windows
800X600	56	35.156	56.25	P	P	36.000	Windows
800x600	60	37.9	60.317	P	P	40.000	Windows
800x600	72	48.077	72.188	P	P	50.000	Windows
800x600	75	46.9	75	P	P	49.500	Windows
1024x768	60	48.4	60.01	N	N	65.000	Windows
1024x768	70	56.476	70.069	N	N	75.000	Windows
1024x768	75	60.0	75.03	P	P	78.750	Windows
720 x 400	70	31.46	70.08	N	P	28.320	DOS
1920X1080	60	66.65	59.99	P	P	136.50	Windows

Remark: P: positive N: negative

Chapter5 Pin Assignment

The TFT LCD monitors use a 15 Pin Mini D-Sub connector as video input source.

Pin	Description
1	Red
2	Green
3	Blue
4	Ground
5	Ground
6	R-Ground
7	G-Ground
8	B-Ground
9	+5V for DDC
10	Ground
11	No Connection
12	(SDA)
13	H-Sync (Composite Sync)
14	V-Sync
15	(SCL)



RGB Signal:

a. Sync Type TTL (Separate / Composite) or Sync. On Green

b. Sync polarity Positive or Negative

c. Video Amplitude RGB: 0.7Vp-p

d. Frequency H: support to 30K~70KHz

V: support to 50~77Hz

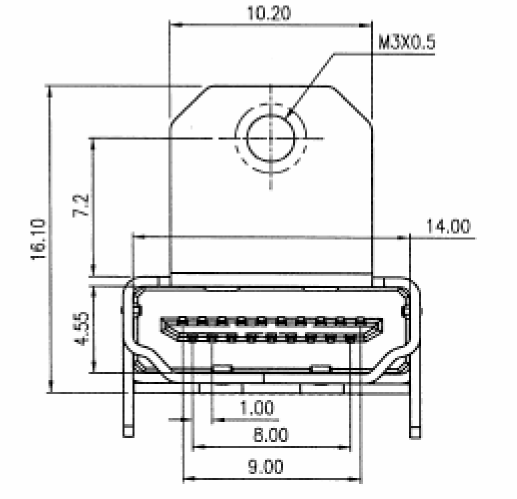
e. Pixel Clock: support to 136.5MHz

f. Connector type: 15-pin D-Sub, female

g. Impedance: 75Ω

HDMI CONNECT PIN ASSIGNMENT:

PIN	SIGNAL ASSIGNMENT
1	TMDS Data2+
2	TMDS Data2 Shield
3	TMDS Data2-
4	TMDS Data1+
5	TMDS Data1 Shield
6	TMDS Data1-
7	TMDS Data0+
8	TMDS Data0 Shield
9	TMDS Data0-
10	TMDS Clock+
11	TMDS Clock Shield
12	TMDS Clock-
13	CEC
14	Reserved (N.C on device)
15	SCL
16	SDA
17	DDC/CEC Ground
18	+5V Power
19	Hot Plug Detect



HDMI Signal (HDMI):

a. Pin Assignment Refer to HDMI Pin Assignment

b. Type A

c. Polarity Positive or Negative

d. Frequency

H: 15.734KHz V: 60Hz (NTSC-480i)

H: 31KHz V: 60Hz (NTSC-480p)

H: 45KHz V: 60Hz (NTSC-720p)

H: 33KHz V: 60Hz (NTSC-1080i)

H: 67.5KHz V: 60Hz (NTSC-1080P)

F-Type TV RF connector

NTSC system

a. Signal level Analog 1Vp-p typical

b. Frequency 55~801 MHz

ATSC system

a. IF-output level 1Vp-p minimum

b. Frequency 57~803 MHz

QAM system (supporting clear QAM)

a. IF-output level 1Vp-p minimum

b. Frequency 57~849 MHz

AV/Composite Video (CVBS) Connector

a. Frequency: H: 15.734KHz V: 60Hz (NTSC)

b. Signal level: Video (Y + C):1Vp-p
Sync (H+V):0.3V below Video (Y+C)

c. Impedance: 75Ω

d. Connector type: RCA Jack

Component video Connector

a. Frequency: H: 15.734KHz V: 60Hz (NTSC-480i)
H: 31KHz V: 60Hz (NTSC-480p)
H: 45KHz V: 60Hz (NTSC-720p)
H: 33KHz V: 60Hz (NTSC-1080i)
H: 67.5KHz V: 60Hz (NTSC-1080P)

b. Signal level: Y: 1Vp-p Pb: ±0.350Vp-p Pr: ±0.350Vp-p

c. Impedance: 75Ω

d. Connector type: RCA Jack

Analog audio in

a. Signal level 1.0Vrms

b. Impedance: 47KΩ

c. Frequency: 350Hz-20KHz

d. Connector type: RCA L/R

Analog Audio out

a. Signal level: 0.5Vrms

b. Impedance: 47KΩ

c. Frequency Response: 350Hz-20KHz (exclude wireless on mode)

d. Connector type: RCA L/R:

Digital audio out

a. Peak emission wavelength: 630 – 690 μm

b. Transmission Speed: 13.2M pbs

c. Connector type: Optical fiber transmitter

Chapter 6 Main Board I/O Connections

J8 Connection（LVDS）

Pin	Description	Pin	Description
1	GND	16	CK1N
2	GND	17	A2P
3	A7P	18	A2N
4	A7N	19	A1P
5	CK2P	20	A1N
6	CK2N	21	A0P
7	A6P	22	A0N
8	A6N	23	LVDS_ROTATE
9	A5P	24	LVDS_OPTION
10	A5N	25	GND
11	A4P	26	GND
12	A4N	27	GND
13	A3P	28	LVDSVDD
14	A3N	29	LVDSVDD
15	CK1P	30	LVDSVDD

J9 Connection（IR）

Pin	Description
1	AMBER
2	WHITE
3	5VSB
4	5VSB
5	OIRI
6	GND
7	GND
8	ADIN-1
9	ADIN-2
10	DV33SB

J10 Connection（To Audio BD）

Pin	Description
1	A01AUXR
2	A01AUXRL-
3	A01AUXL
4	MUTE AMP
5	SUB
6	SUB-
7	GND

J3 Connection（JTAG INTERFACE）

Pin	Description
1	TVTREF1
2	DV33
3	nJTRST
4	GND
5	JTDI
6	GND
7	JTMS
8	GND
9	JTCK
10	GND
11	JRTCK
12	GND
13	JTDO
14	GND
15	NC
16	GND
17	JTAG DBGRQ
18	GND
19	JTAG DBGACK
20	GND

J1 Connection（POWER IN）

Pin	Description
1	POWER SW ON OFF
2	+12V
3	+12V
4	+12V
5	GND
6	GND
7	GND
8	SGND
9	+5VSB
10	+5VSB
11	+5VSB
12	PWM DIM
13	BL ON OFF

Audio Board I/O Connections

J1 Connection（IN）

Pin	Description
1	A01AUXR
2	A01AUXRL-
3	A01AUXL
4	MUTE AMP

J2 Connection（TO POWER BOARD）

Pin	Description
1	+24V
2	+24V
3	GND
4	GND

J3 Connection (SPEAKER)

Pin	Description
1	L+
2	L-
3	R-
4	R+

Chapter 7 Theory of Circuit Operation

The route of D-SUB 15pin input

An RGB (analog) signal is inputted the D-SUB 15pin to the *MT5382* which transfers it to a digital signal by the A/D converter. Then MT5382 generates a Low Voltage Differential Signal (LVDS) for display device.

The route of HDMI CON input

A HDMI (digital) signal is inputted the HDMI 1,2&3 CON. The passing signal is processed with the MT5382. Then MT5382 generates a LVDS for display device.

The route of HDTV & Component input

HDTV & Component signal is inputted to the MT5382. After processing, MT5382 generates a LVDS for display device. The audio signal is inputted *MT8292*. After processing, MT8292 transmits the signal to *audio board*, an audio amplifier. Then, the amplified signal is the output audio signal.

The route of Video 1 & S-Video input

The Video 1 and S-Video signal is inputted to the MT5382.After processing, MT5382 generates a LVDS for display device. The audio signal is inputted MT8292. After processing, MT8292 transmits the signal to audio board, an audio amplifier. Then, the amplified signal is the output audio signal.

The route of TV input

TV signal is demodulated by the tuner then the demodulating signal is divided into two parts, video and audio signal. The video signal is processed by MT5382 then MT5382 generates a LVDS for display device. The audio signal is transmitted in the route named SIF. The SIF signal is demodulated and decoded by MT5382. The decoded analog signal is transferred into I2S, which is digital signal, by MT5382. The I2S signal is inputted and transferred into analog signal by MT8292. After processing, MT8292 transmits the signal to audio board, an audio amplifier. Then, the amplified signal is the output audio signal.

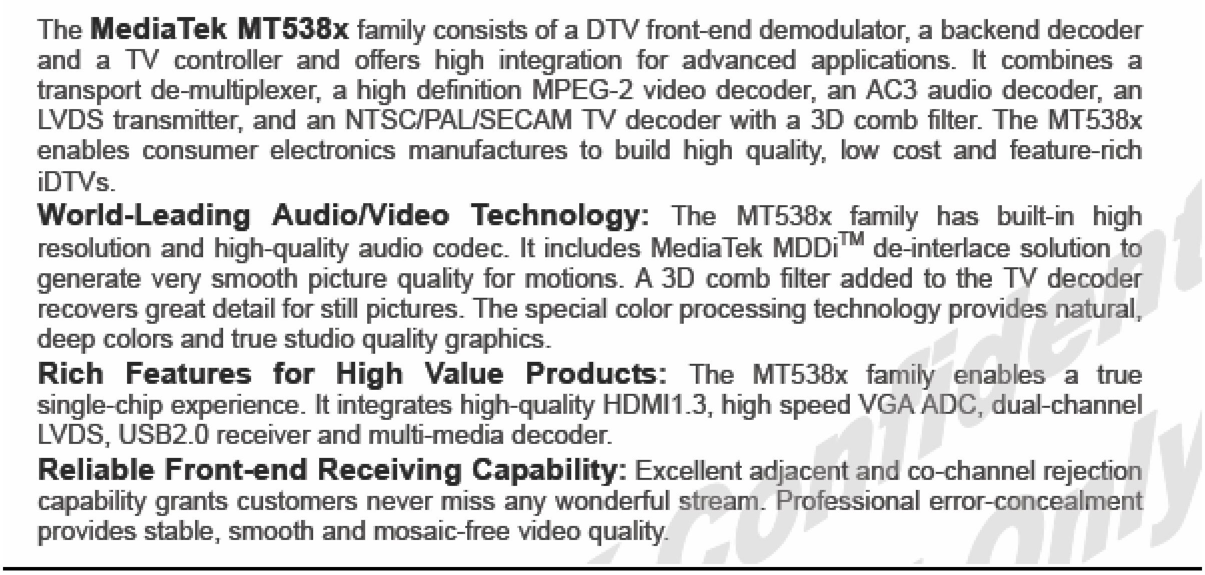
The route of DTV input

DTV signal demodulated by the tuner then the demodulating signal is divided into two parts, video and audio signal. The video signal is decoding by *MT5382*. The decoded signal, as the format of MPEG2, is transmitted to and processed by MT5382. Also, MT5382 generates a LVDS for display device. The audio signal is transmitted in the route named FAT-IN. The FAT-IN signal is demodulated and decoded by MT5382. MT5382 decoded analog signal outputted to MT8292. After processing, MT8292 transmits the signal to audio board, an audio amplifier. Then, the amplified signal is the output audio signal.

The operation of keypad

There are 7 keys to control and to select the function of VW47LF. Also, there is a LED back light under the logo “VIZIO” to indicate the status of operation (Orange => STANDBY, White => ON). They are “Power, ▼▲, + -, Input, MENU”.

MT5382



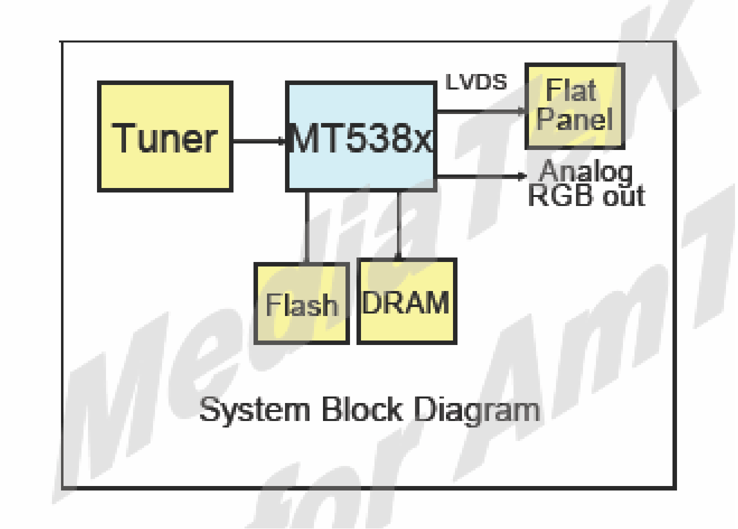
The **MediaTek MT538x** family consists of a DTV front-end demodulator, a backend decoder and a TV controller and offers high integration for advanced applications. It combines a transport de-multiplexer, a high definition MPEG-2 video decoder, an AC3 audio decoder, an LVDS transmitter, and an NTSC/PAL/SECAM TV decoder with a 3D comb filter. The MT538x enables consumer electronics manufactures to build high quality, low cost and feature-rich iDTVs.

World-Leading Audio/Video Technology: The MT538x family has built-in high resolution and high-quality audio codec. It includes MediaTek MDDi™ de-interlace solution to generate very smooth picture quality for motions. A 3D comb filter added to the TV decoder recovers great detail for still pictures. The special color processing technology provides natural, deep colors and true studio quality graphics.

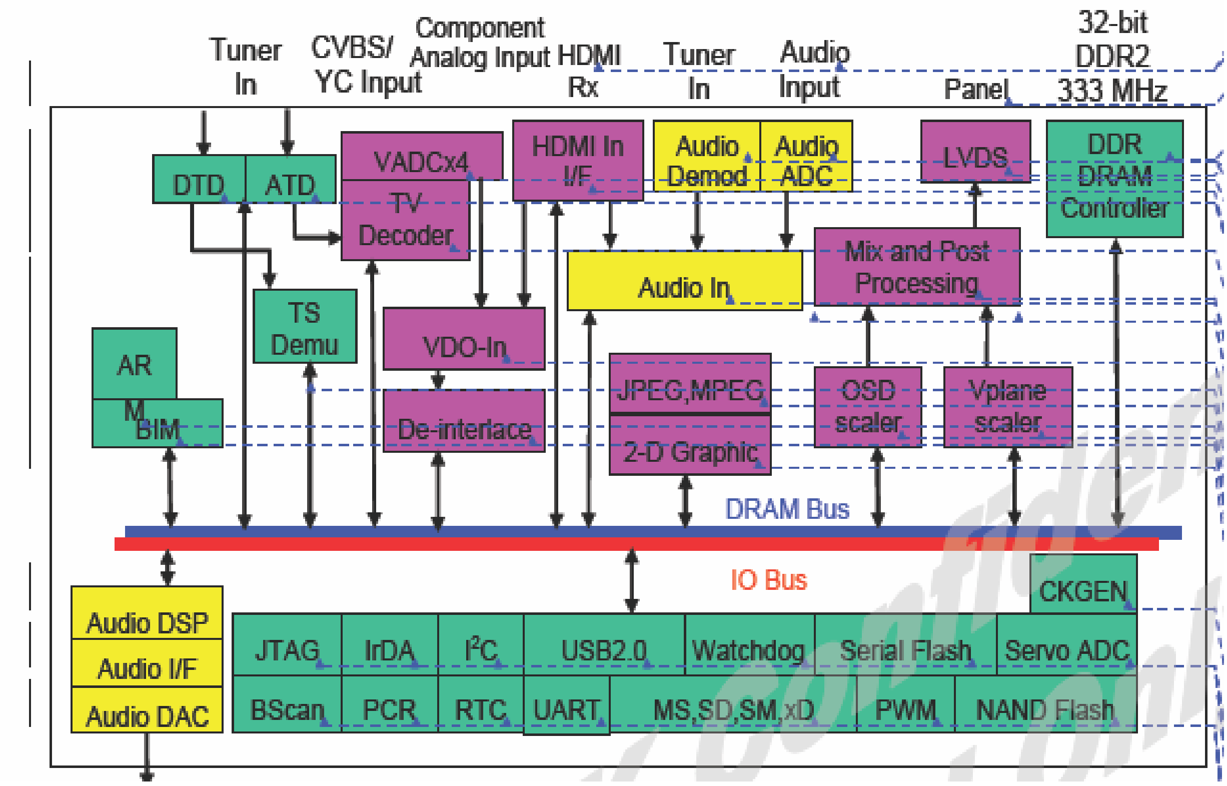
Rich Features for High Value Products: The MT538x family enables a true single-chip experience. It integrates high-quality HDMI1.3, high speed VGA ADC, dual-channel LVDS, USB2.0 receiver and multi-media decoder.

Reliable Front-end Receiving Capability: Excellent adjacent and co-channel rejection capability grants customers never miss any wonderful stream. Professional error-concealment provides stable, smooth and mosaic-free video quality.

System Block Diagram



Functional Block Diagram



Ⅱ. Features of MT5382

1. Host CPU:

1. ARM 926EJS
2. 8K I-Cache and 8K D-Cache
3. 4K Instruction TCM
4. JTAG ICE interface
5. Watch Dog timers
6. Built-in CPI analyzer

2. Transport De-multiplexer:

1. Supports a serial or parallel transport stream input
2. Supports ATSC, MPEG2 transport stream inputs
3. Supports DES/3-DES/DVB de-scramblers
4. Up to 8 PID even/odd keys for descrambling
5. Supports 32 PID filters and 32 section filters
6. Supports positive/negative/mask section filtering
7. Supports hardware CRC-32 check
8. Support PCR recovery function
9. Support a micro-processor for stream process and MPEG start code detection

3. MPEG-2/JPEG Decoder:

1. Supports one MPEG-2 HD decoder
2. MPEG MP@ML, MP@HL and MPEG-1 video standards
3. The MT5382 supports de-blocking filter
4. The MT538xA and MT538xM support JPEG decode base-line or progressive JPEG file

4. 2D Graphics:

1. Supports multiple color modes
2. Point, horizontal/vertical line primitive drawings
3. Rectangle fill and gradient fill functions
4. Bitblt with transparent options
5. Alpha blending and alpha composition Bitblt
6. Font rendering by color expansion

7. YCbCr to RGB color space conversion
8. Supports off-line scaler

5. OSD Plane:

1. Two linking list OSD with multiple color modes and one of them has scaler

6. Video Plane:

1. Support video capture and over scan
2. Flesh tone management
3. Gamma/anti-Gamma correction
4. Color Transient Improvement (CTI)
5. 2D peaking
6. Saturation/hue adjustment
7. Brightness and contrast adjustment
8. Black and White level extender
9. Adaptive Luma/Chroma management
10. Automatic detect films or video sources
11. 3:2/2:2 pull down source detection
12. The MT5380 support bob mode de-interlace.
    The MT5381 support 1366 width motion-adaptive de-interlace.
    The MT5382 supports maximum 1920 width motion-adaptive de-interlace. The entire MT538x family supports excellent low angle image processing.
13. Arbitrary ratio vertical/horizontal scaling of video, from 1/32X to 32X
14. Advanced non-linear panoramic scaling.
15. Programmable zoom viewer
16. Progressive or interlace scan output
17. Supports alpha blending
18. Dithering processing for flat panel display
19. Frame rate conversion
20. The MT5382 support FHD panel and VGA dot-to-dot
21. Does not support PIP/POP

7. LVDS:

1. Support 6/8/10-bit one-channel or 6/8-bit dual-channel LVDS transmitter, speeding up to 75MHz
2. Built-in spread spectrum for EMI performance
3. Programmable panel timing output

8. CVBS In:

1. On-chip 54MHz 10-bit video ADC
2. Supports PAL (B,G,D,H,M,N,I,Nc), NTSC, NTSC-4.43, SECAM
3. Macrovision detection
4. NTSC/PAL support 3D comb filter, SECAM supports 2D comb filter.
5. Built-in Motion-adaptive 3D Noise Reduction
6. VBI data slicer for CC/TT decoding
7. Supports 2-S-Video
8. The MT5380 support 2-channel CVBS, the MT5381/MT5382 support 4-channel CVBS.
9. Support SCART connector

9. VGA In:

1. Supports VGA input up to UXGA 162MHz
2. Supports full VESA standards

10. Component Video In:

1. Supports two component video inputs
2. Supports 480i/480p/576i/576p/720p/1080i/1080P, 1080P

11. Audio line In Interface:

The MT5381/MT5382 support 1-bit line data (two channels)

12. HDMI Receiver:

1. Fixed 3 channels of HDMI1.3,data rate can be up to 2.25 GHz
2. EIA/CEA-861B

13. Audio ADC:

The MT5380 supports 8-channel (4 R/L pairs) analog audio input. The MT5381/MT5382 support 14-channel (7 R/L pairs) analog audio input.

14. TV audio demodulator:

1. Supports BTSC/EIA-J/A2/NICAM/PAL,FM /SECAM world wild formats
2. Standard automatic detection
3. Stereo demodulation, SAP demodulation
4. Mode selection (Main/SAP/Stereo)

15. Audio DAC

Four on-chip audio DACs (2 R/L pairs) support R/L channel and subwoofer outputs

16. DRAM Controller:

1. Supports 64Mb to 512Mb DDR DRAM devices
2. The MT5380 support 16-bit data bus; the MT5381/MT5382 support configurable 16/32-bit data bus interface. The 16-bit address offers up to 64M byte space. The 32-bit address offers up to 128M byte space.
3. Supports DDR1-333, DDR1-400, DDR2-400, DDR2-533,DDR2-667

17. Audio DSP

1. Supports Dolby Digital AC-3 decoding(ATSC)
2. MPEG-1 layer I/II decoding (DVB)
3. Dolby Prologic II
4. Audio output 7.1ch+2ch (down mix)
5. Pink noise and white noise generator
6. Equalizer
7. Bass management
8. 3D surround processing with virtual surround
9. Audio and video lip synchronization
10. Support reverberation
11. Automatic volume control
12. One SPDIF out

13. While the internal audio DAC is disabled, the MT5381/MT5382 support 5-bit (10-channel) main audio I2S output interface :each of these channels is up 24-bit resolution. The MT5380 support 1-bit (2-channel) main audio I2S output interface : each of these channel is up to 24-bit resolution.
14. While the internal audio DAC is disabled , the MT538x family supports 1-bit(2-channel)aux audio I2S output I/F: each of these channels is up to 24-bit resolution.

18. Digital TV Demodulator

1. Compliant with ATSC digital television standard
2. Support SCTE DVS-031 and ITU J.83 Annex B digital CATV standard
3. Accepts direct IF (44MHz or 43.75 MHz) and low (5.38MHz)
4. NTSC interference rejection capability
5. Passes all ATSC/A74 requirements
6. Excellent adjacent and co-channel rejection capability , only a single SAW is reqired
7. Dual digital AGC controls for IF and RF, respectively
8. Full-digital frequency offset recovery with wide acquisition range ±1MHz for ATSC and ±250kHz for CATV reception
9. EIA/CEA-909 antenna interface , both mode A and mode B are supported

19. Analog TV IF Demodulator

1. Support NTSC M/N standard
2. Accepts IF frequency at 45.75MHz
3. Full digital AGC control and carrier recovery

20. Peripherals:

1. Each of the MT5381/MT5382 has two built-in UARTs with Tx and Rx FIFO. One of them has hardware flow control and high speed data transferring ; the MT5380 only has one UART
2. The MT538x family has three basic serial interfaces; one is for the tuner, one is the master for general purpose, the other is the slave for HDMI EDID data. The MT5381/MT5382 have two extra slave serial interfaces used for the second and the third HDMI EDID data .
3. Three PWMs

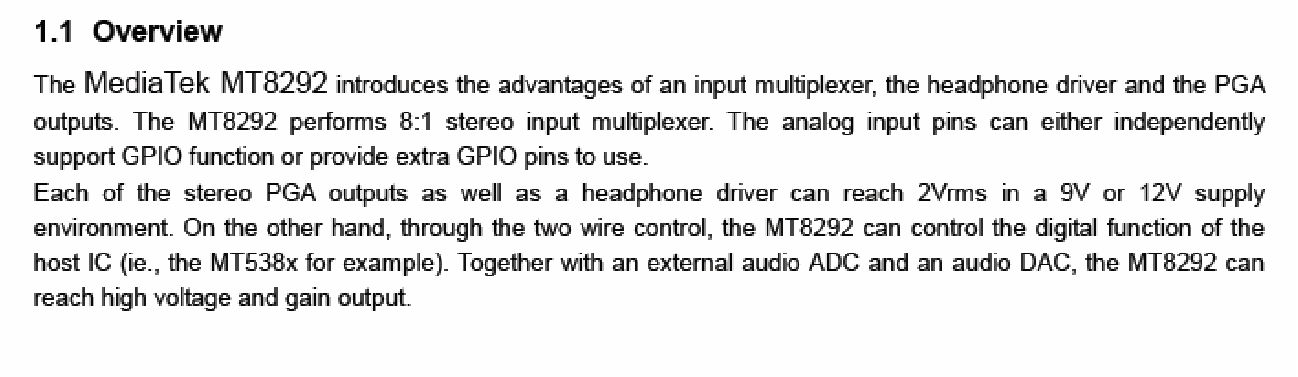
4. While NAND Flash is disabled, the MT5381/MT5382 support xD/SM,MS/MS-PRO,SD/MMC, and SDHC card reader.
5. IR blaster and receiver
6. Real-time clock and watchdog controller
7. 1-port USB2.0/1.1 host supports USB mass storage class devices.
8. The MT5381/MT5382 support two serial flash and one NAND flash ; the MT5380 only supports one serial flash
9. Supports five servo ADCs.

21. IC Outline:

1. The MT5380 is 256-pin LQFP;the MT5381/MT5382 is 465-pin BGA Package
2. 3.3V/1.0V and 2.5V for DDR1,1.8V for DDR2

MT8292

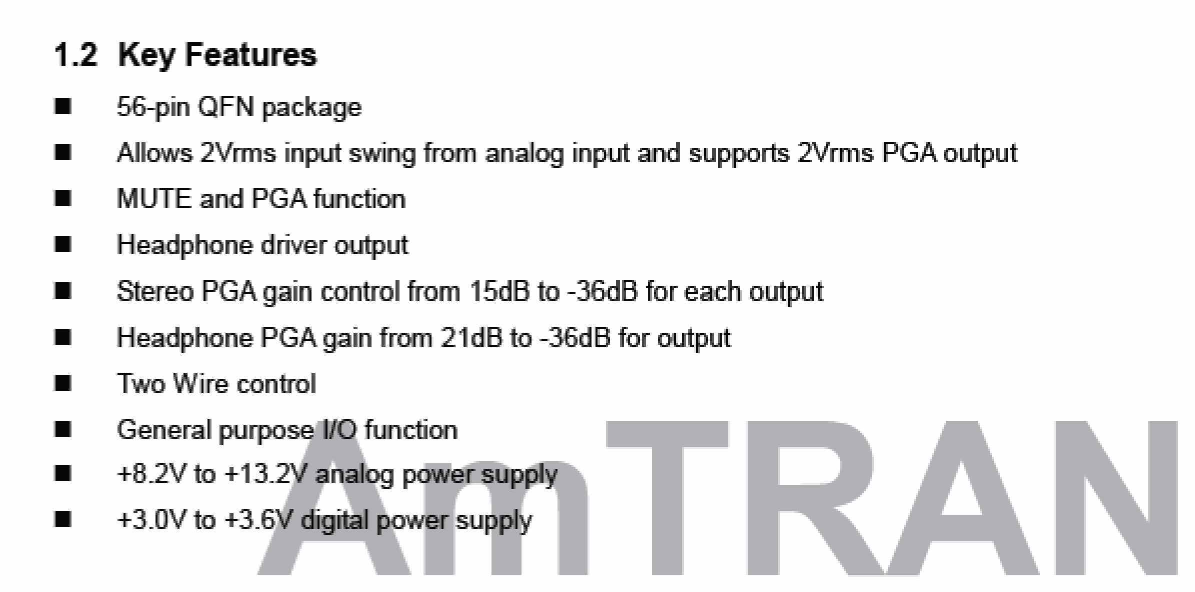
GENERAL DESCRIPTION



1.1 Overview

The MediaTek MT8292 introduces the advantages of an input multiplexer, the headphone driver and the PGA outputs. The MT8292 performs 8:1 stereo input multiplexer. The analog input pins can either independently support GPIO function or provide extra GPIO pins to use.

Each of the stereo PGA outputs as well as a headphone driver can reach 2Vrms in a 9V or 12V supply environment. On the other hand, through the two wire control, the MT8292 can control the digital function of the host IC (ie., the MT538x for example). Together with an external audio ADC and an audio DAC, the MT8292 can reach high voltage and gain output.



1.2 Key Features

- 56-pin QFN package
- Allows 2Vrms input swing from analog input and supports 2Vrms PGA output
- MUTE and PGA function
- Headphone driver output
- Stereo PGA gain control from 15dB to -36dB for each output
- Headphone PGA gain from 21dB to -36dB for output
- Two Wire control
- General purpose I/O function
- +8.2V to +13.2V analog power supply
- +3.0V to +3.6V digital power supply

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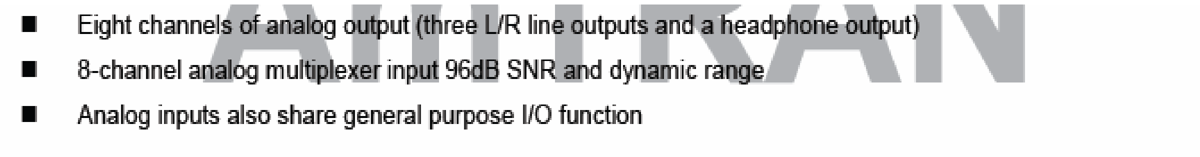
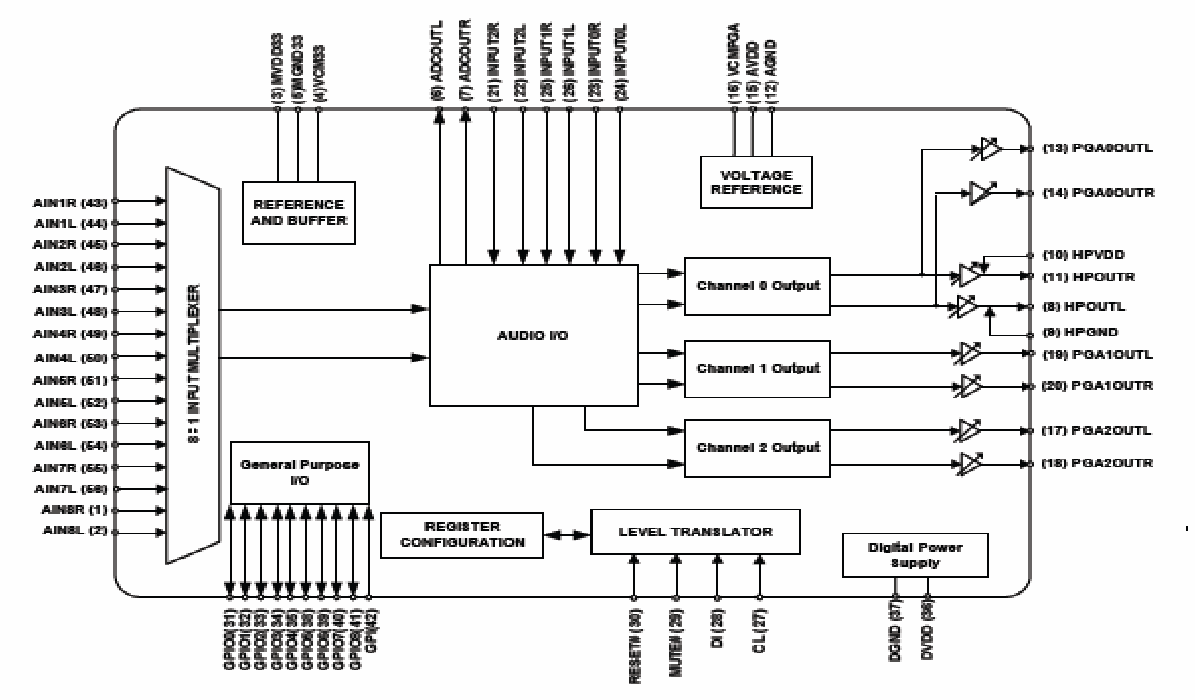
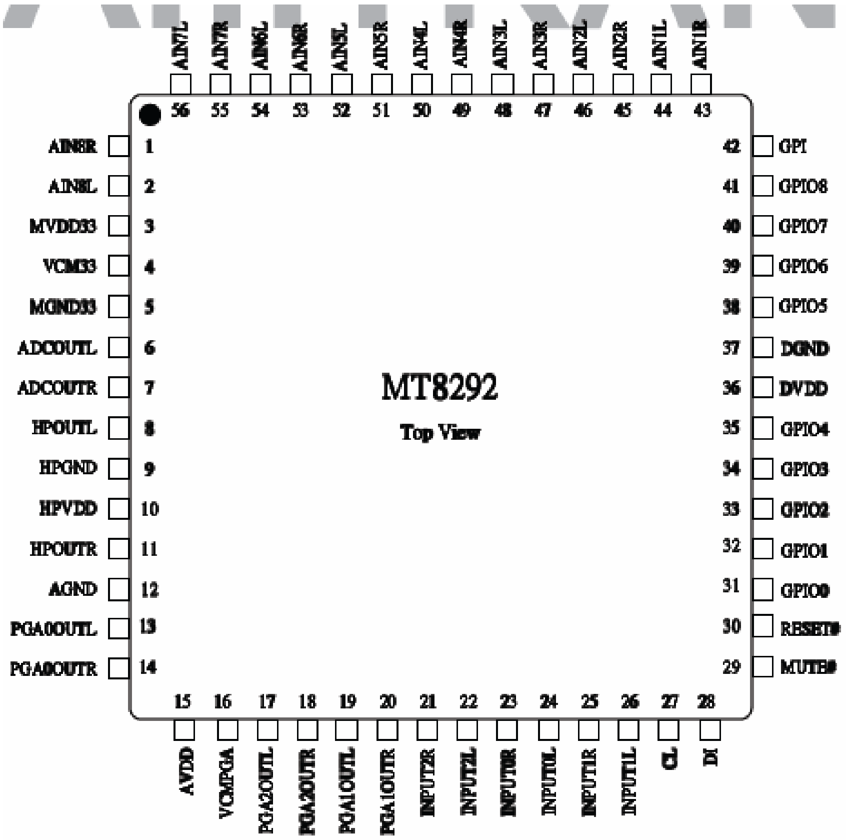


- Eight channels of analog output (three L/R line outputs and a headphone output)
- 8-channel analog multiplexer input 96dB SNR and dynamic range
- Analog inputs also share general purpose I/O function

FUNCTIONAL BLOCK DIAGRAM



PIN ASSIGNMENT



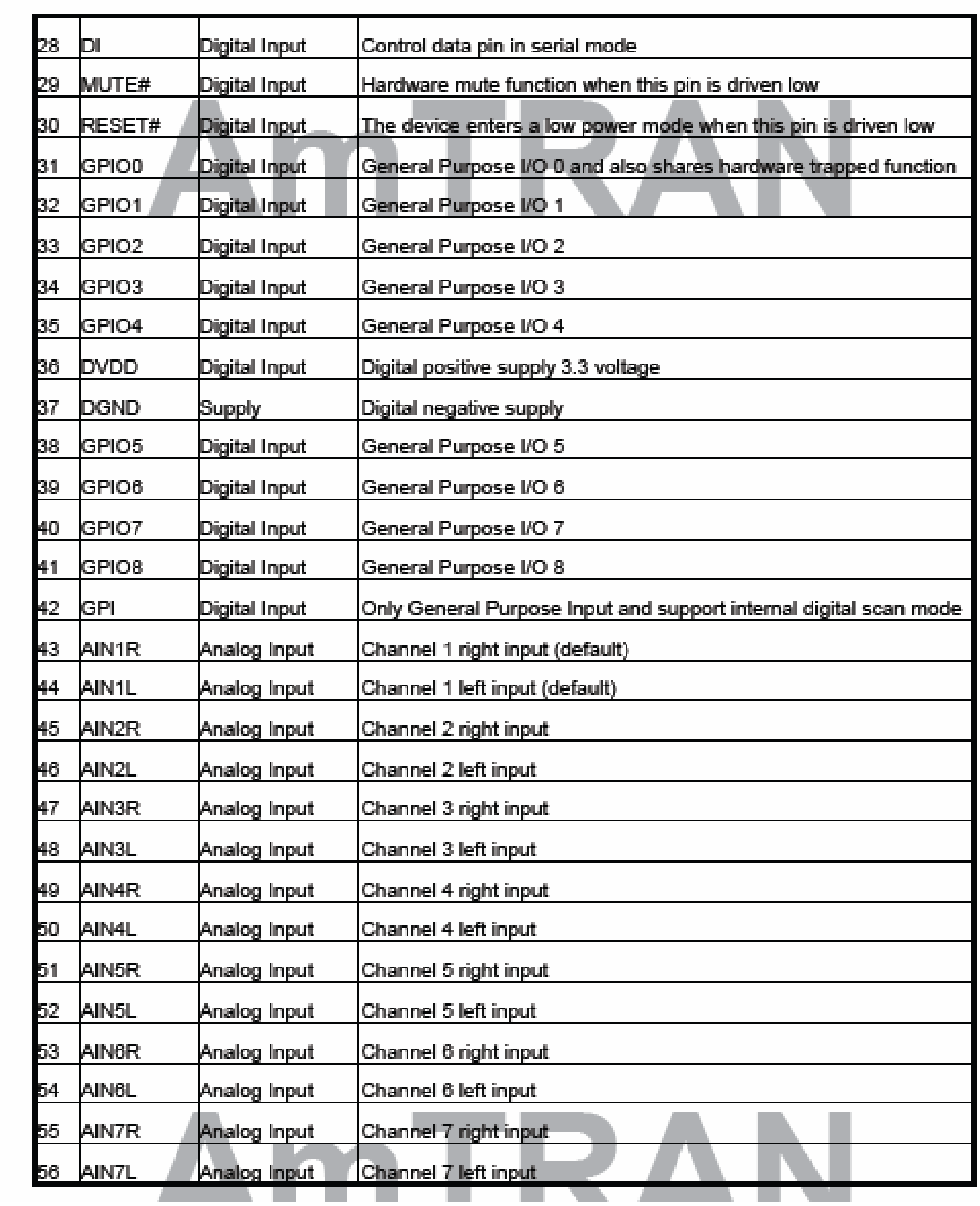
PIN DESCRIPTION

Pin Description

AmTRAN

No	PIN NAME	TYPE	FUNCTION
1	AIN8R	Analog Input	Channel 8 right input
2	AIN8L	Analog Input	Channel 8 left input
3	MVDD33	Supply	Multiplexer positive supply 3.3 voltage
4	VCM33	Analog Output	Multiplexer midrail divider decoupling pin
5	MGND33	Supply	Multiplexer negative supply
6	ADCOUTL	Analog Output	Analog multiplexer left output
7	ADCOUTR	Analog Output	Analog multiplexer right output
8	HPOUTL	Analog Output	Headphone right channel output
9	HPGND	Supply	Headphone ground supply pin
10	HPVDD	Supply	Headphone power supply pin
11	HPOUTR	Analog Output	Headphone right channel output
12	AGND	Supply	Analog negative supply
13	PGA0OUTL	Analog Input	PGA channel 0 left output
14	PGA0OUTR	Analog Input	PGA channel 0 right output
15	AVDD	Supply	Analog positive supply 12 voltage or 9 voltage
16	VCMPGA	Analog Output	PGA midrail divider decoupling pin
17	PGA2OUTL	Analog Input	PGA channel 2 left output
18	PGA2OUTR	Analog Input	PGA channel 2 right output
19	PGA1OUTL	Analog Input	PGA channel 1 left output
20	PGA1OUTR	Analog Input	PGA channel 1 right output
21	INPUT2R	Analog Input	Channel 2 right input to PGA gain module
22	INPUT2L	Analog Input	Channel 2 left input to PGA gain module
23	INPUT0R	Analog Input	Channel 0 right input to PGA gain module
24	INPUT0L	Analog Input	Channel 0 left input to PGA gain module
25	INPUT1R	Analog Input	Channel 1 right input to PGA gain module
26	INPUT1L	Analog Input	Channel 1 left input to PGA gain module
27	CL	Digital Input	Control clock pin in serial mode

AmTRAN



28	DI	Digital Input	Control data pin in serial mode
29	MUTE#	Digital Input	Hardware mute function when this pin is driven low
30	RESET#	Digital Input	The device enters a low power mode when this pin is driven low
31	GPIO0	Digital Input	General Purpose I/O 0 and also shares hardware trapped function
32	GPIO1	Digital Input	General Purpose I/O 1
33	GPIO2	Digital Input	General Purpose I/O 2
34	GPIO3	Digital Input	General Purpose I/O 3
35	GPIO4	Digital Input	General Purpose I/O 4
36	DVDD	Digital Input	Digital positive supply 3.3 voltage
37	DGND	Supply	Digital negative supply
38	GPIO5	Digital Input	General Purpose I/O 5
39	GPIO6	Digital Input	General Purpose I/O 6
40	GPIO7	Digital Input	General Purpose I/O 7
41	GPIO8	Digital Input	General Purpose I/O 8
42	GPI	Digital Input	Only General Purpose Input and support internal digital scan mode
43	AIN1R	Analog Input	Channel 1 right input (default)
44	AIN1L	Analog Input	Channel 1 left input (default)
45	AIN2R	Analog Input	Channel 2 right input
46	AIN2L	Analog Input	Channel 2 left input
47	AIN3R	Analog Input	Channel 3 right input
48	AIN3L	Analog Input	Channel 3 left input
49	AIN4R	Analog Input	Channel 4 right input
50	AIN4L	Analog Input	Channel 4 left input
51	AIN5R	Analog Input	Channel 5 right input
52	AIN5L	Analog Input	Channel 5 left input
53	AIN6R	Analog Input	Channel 6 right input
54	AIN6L	Analog Input	Channel 6 left input
55	AIN7R	Analog Input	Channel 7 right input
56	AIN7L	Analog Input	Channel 7 left input

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3.1.1 Absolute Maximum Ratings

CONDITION	MIN	MAX
Analog supply voltage	-0.3V	+14.8V
Digital supply voltage	-0.3V	+3.6V
Analog inputs voltage	AGND -0.3V	AVDD +0.3V
Storage temperature, Tstg	−40° C	+150° C
Junction temperature, Tj	−40° C	+125° C
Operating temperature, Tp	−10° C	+ 70° C

3.1.2 Recommended Operating Conditions

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Analog supply range	AVDD, HPVDD	8.2	-	13.2	V
Digital supply range	DVDD	3.0	3.3	3.6	V
Ground	HPGND, AGND, DGND, MGND33	-	0	-	V
|DGNG – AGND|	-	-	-	0.3	V

3.1.3 Electrical Characteristics

AVDD=9V, DVDD=3.3V, ADCGND/DACGND=0V, Ta= + 25° C

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Digital Logic Levels						
Input LOW level	VIL	-	-	-	0.8	V
Input HIGH level	VIH	-	2.0	-	-	V
Output LOW	VOL	-	-	-	0.4	V
Output HIGH	VOH	-	2.4	-	-	V
Analog Output Reference Levels						
0dBFs full scale output voltage	-	At every outputs,0dB PGA Gain, THD+N<-80dB		2.0	2.33	Vrms

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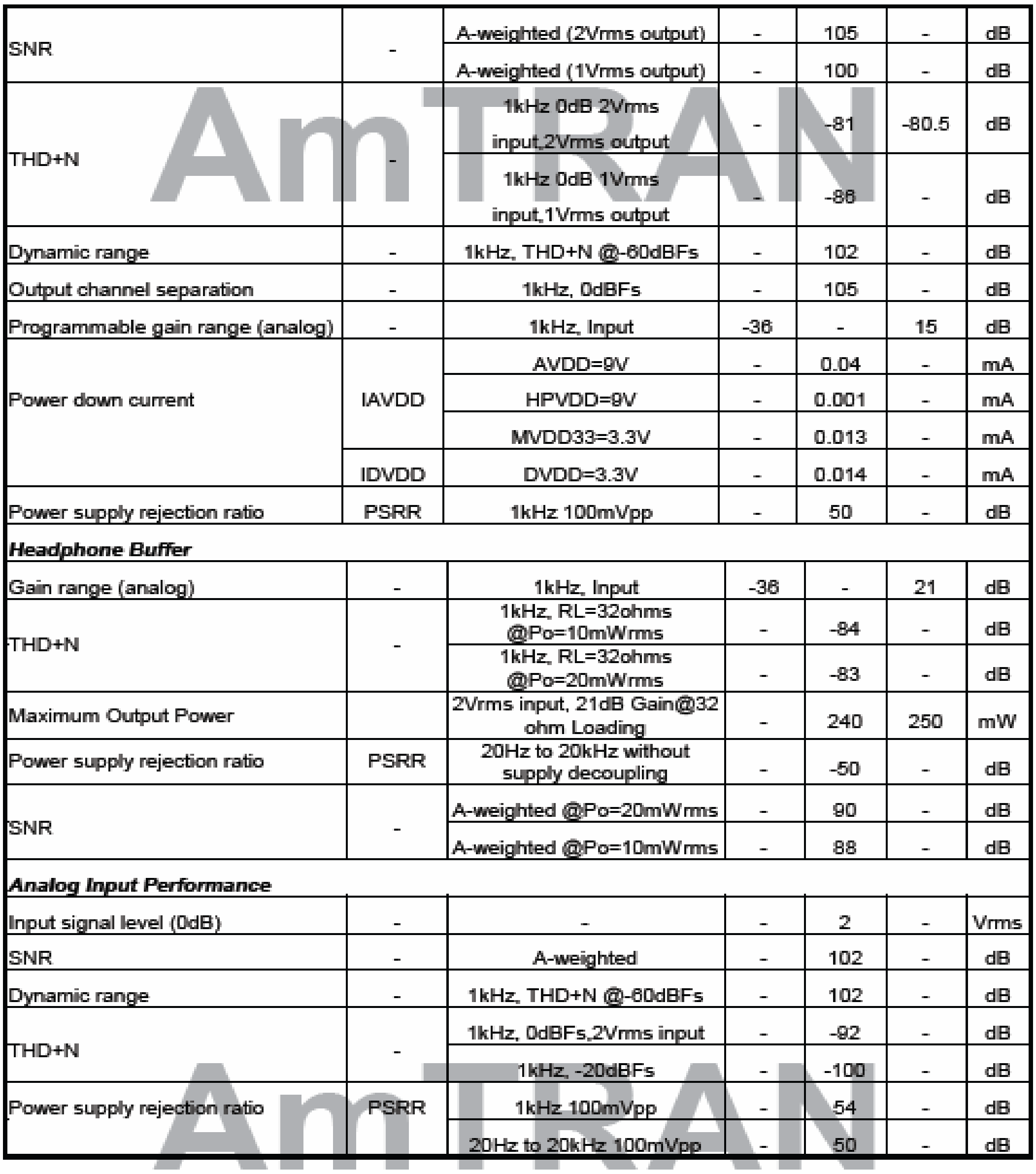
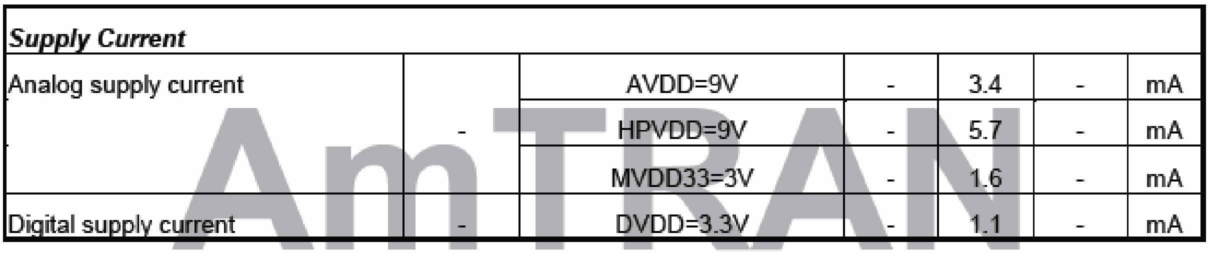


SNR	-	A-weighted (2Vrms output)	-	105	-	dB
		A-weighted (1Vrms output)	-	100	-	dB
THD+N	-	1kHz 0dB 2Vrms input,2Vrms output	-	-81	-80.5	dB
		1kHz 0dB 1Vrms input,1Vrms output	-	-86	-	dB
Dynamic range	-	1kHz, THD+N @-60dBFs	-	102	-	dB
Output channel separation	-	1kHz, 0dBFs	-	105	-	dB
Programmable gain range (analog)	-	1kHz, Input	-36	-	15	dB
Power down current	IAVDD	AVDD=9V	-	0.04	-	mA
		HPVDD=9V	-	0.001	-	mA
		MVDD33=3.3V	-	0.013	-	mA
	IDVDD	DVDD=3.3V	-	0.014	-	mA
Power supply rejection ratio	PSRR	1kHz 100mVpp	-	50	-	dB
Headphone Buffer						
Gain range (analog)	-	1kHz, Input	-36	-	21	dB
THD+N	-	1kHz, RL=32ohms @Po=10mWrms	-	-84	-	dB
		1kHz, RL=32ohms @Po=20mWrms	-	-83	-	dB
Maximum Output Power		2Vrms input, 21dB Gain@32 ohm Loading	-	240	250	mW
Power supply rejection ratio	PSRR	20Hz to 20kHz without supply decoupling	-	-50	-	dB
SNR	-	A-weighted @Po=20mWrms	-	90	-	dB
		A-weighted @Po=10mWrms	-	88	-	dB
Analog Input Performance						
Input signal level (0dB)	-	-	-	2	-	Vrms
SNR	-	A-weighted	-	102	-	dB
Dynamic range	-	1kHz, THD+N @-60dBFs	-	102	-	dB
THD+N	-	1kHz, 0dBFs,2Vrms input	-	-92	-	dB
		1kHz, -20dBFs	-	-100	-	dB
Power supply rejection ratio	PSRR	1kHz 100mVpp	-	54	-	dB
		20Hz to 20kHz 100mVpp	-	50	-	dB



Supply Current						
Analog supply current	-	AVDD=9V	-	3.4	-	mA
		HPVDD=9V	-	5.7	-	mA
		MVDD33=3V	-	1.6	-	mA
Digital supply current	-	DVDD=3.3V	-	1.1	-	mA

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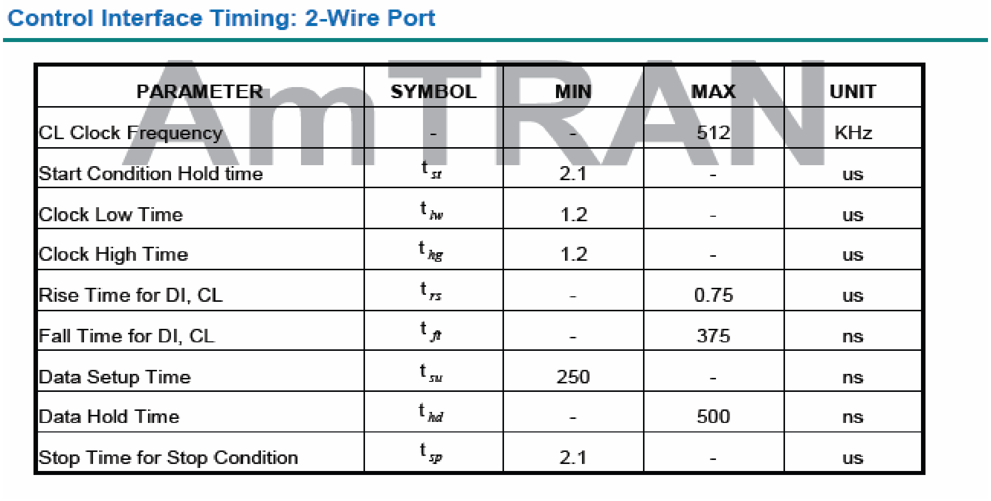


Control Interface Timing: 2-Wire Port

AmTRAN

PARAMETER	SYMBOL	MIN	MAX	UNIT
CL Clock Frequency	-	-	512	KHz
Start Condition Hold time	t_{st}	2.1	-	us
Clock Low Time	t_{lw}	1.2	-	us
Clock High Time	t_{hg}	1.2	-	us
Rise Time for DI, CL	t_{rs}	-	0.75	us
Fall Time for DI, CL	t_{ft}	-	375	ns
Data Setup Time	t_{su}	250	-	ns
Data Hold Time	t_{hd}	-	500	ns
Stop Time for Stop Condition	t_{sp}	2.1	-	us

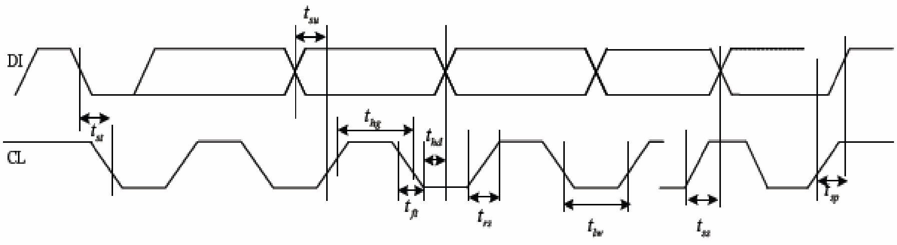
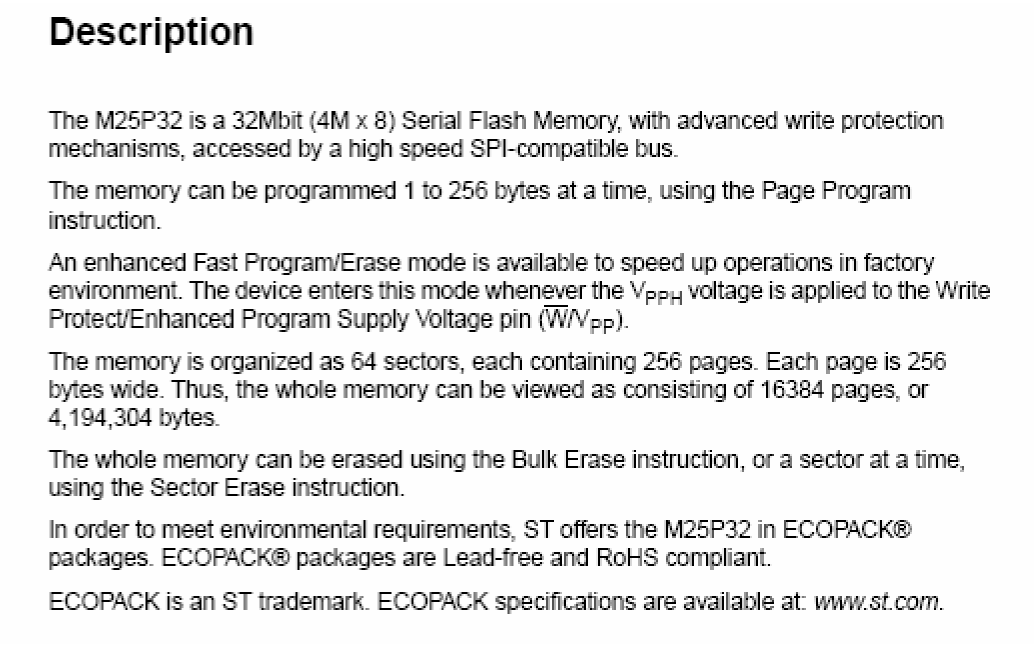


Figure 3: Control Port Timing

Flash: M25P32



Description

The M25P32 is a 32Mbit (4M x 8) Serial Flash Memory, with advanced write protection mechanisms, accessed by a high speed SPI-compatible bus.

The memory can be programmed 1 to 256 bytes at a time, using the Page Program instruction.

An enhanced Fast Program/Erase mode is available to speed up operations in factory environment. The device enters this mode whenever the V_{PPH} voltage is applied to the Write Protect/Enhanced Program Supply Voltage pin ($\overline{W}/V_{PP}$).

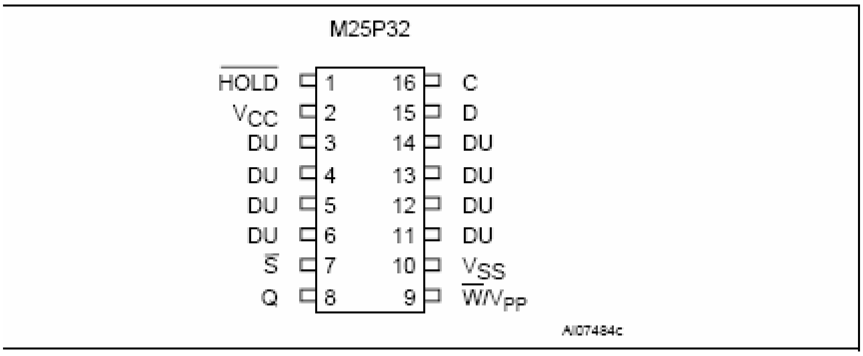
The memory is organized as 64 sectors, each containing 256 pages. Each page is 256 bytes wide. Thus, the whole memory can be viewed as consisting of 16384 pages, or 4,194,304 bytes.

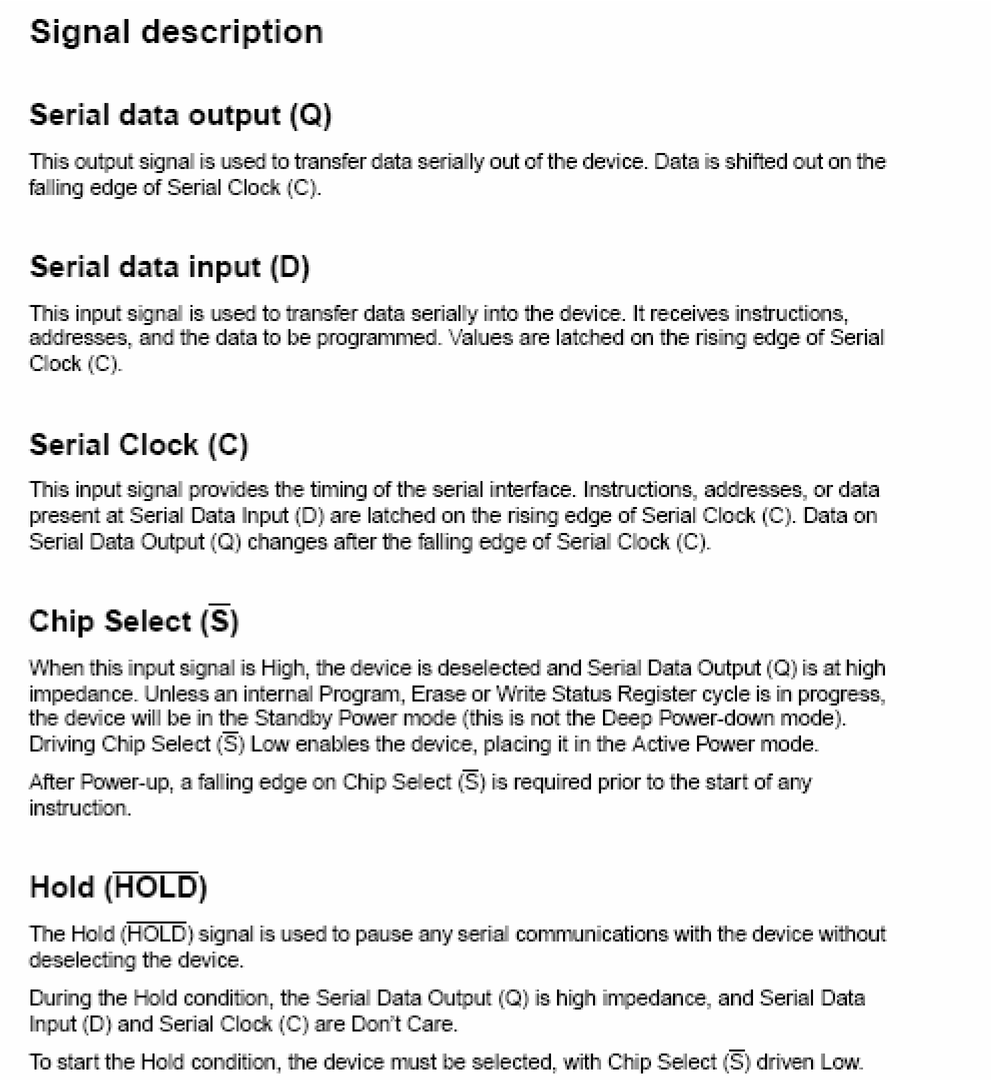
The whole memory can be erased using the Bulk Erase instruction, or a sector at a time, using the Sector Erase instruction.

In order to meet environmental requirements, ST offers the M25P32 in ECOPACK® packages. ECOPACK® packages are Lead-free and RoHS compliant.

ECOPACK is an ST trademark. ECOPACK specifications are available at: *www.st.com*.

SO connections





Signal description

Serial data output (Q)

This output signal is used to transfer data serially out of the device. Data is shifted out on the falling edge of Serial Clock (C).

Serial data input (D)

This input signal is used to transfer data serially into the device. It receives instructions, addresses, and the data to be programmed. Values are latched on the rising edge of Serial Clock (C).

Serial Clock (C)

This input signal provides the timing of the serial interface. Instructions, addresses, or data present at Serial Data Input (D) are latched on the rising edge of Serial Clock (C). Data on Serial Data Output (Q) changes after the falling edge of Serial Clock (C).

Chip Select ($\overline{S}$)

When this input signal is High, the device is deselected and Serial Data Output (Q) is at high impedance. Unless an internal Program, Erase or Write Status Register cycle is in progress, the device will be in the Standby Power mode (this is not the Deep Power-down mode). Driving Chip Select ($\overline{S}$) Low enables the device, placing it in the Active Power mode.

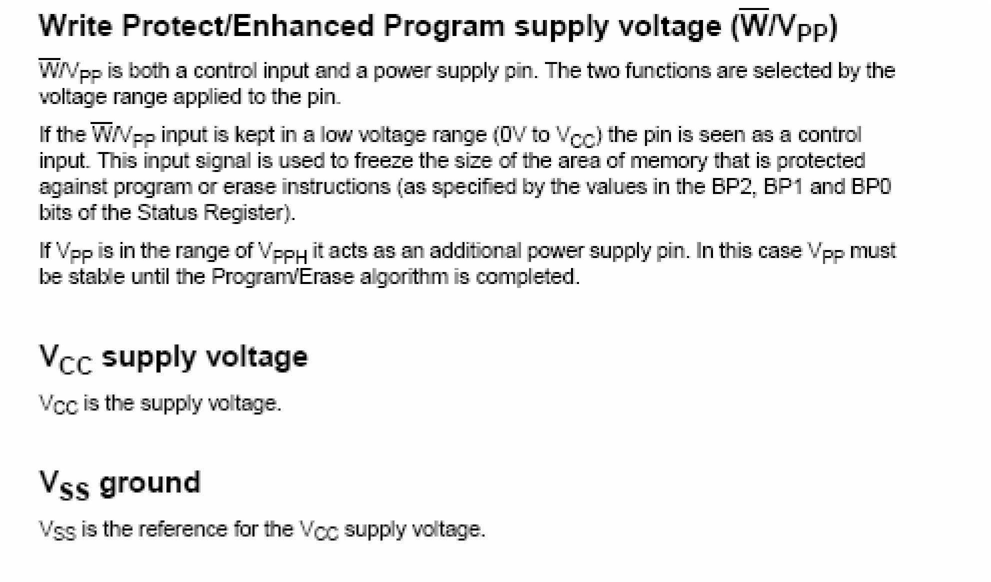
After Power-up, a falling edge on Chip Select ($\overline{S}$) is required prior to the start of any instruction.

Hold ($\overline{HOLD}$)

The Hold ($\overline{HOLD}$) signal is used to pause any serial communications with the device without deselecting the device.

During the Hold condition, the Serial Data Output (Q) is high impedance, and Serial Data Input (D) and Serial Clock (C) are Don't Care.

To start the Hold condition, the device must be selected, with Chip Select ($\overline{S}$) driven Low.



Write Protect/Enhanced Program supply voltage ($\overline{W}/V_{PP}$)

$\overline{W}/V_{PP}$ is both a control input and a power supply pin. The two functions are selected by the voltage range applied to the pin.

If the $\overline{W}/V_{PP}$ input is kept in a low voltage range (0V to V_{CC}) the pin is seen as a control input. This input signal is used to freeze the size of the area of memory that is protected against program or erase instructions (as specified by the values in the BP2, BP1 and BP0 bits of the Status Register).

If V_{PP} is in the range of V_{PPH} it acts as an additional power supply pin. In this case V_{PP} must be stable until the Program/Erase algorithm is completed.

V_{CC} supply voltage

V_{CC} is the supply voltage.

V_{SS} ground

V_{SS} is the reference for the V_{CC} supply voltage.

3 SPI modes

These devices can be driven by a microcontroller with its SPI peripheral running in either of the two following modes:

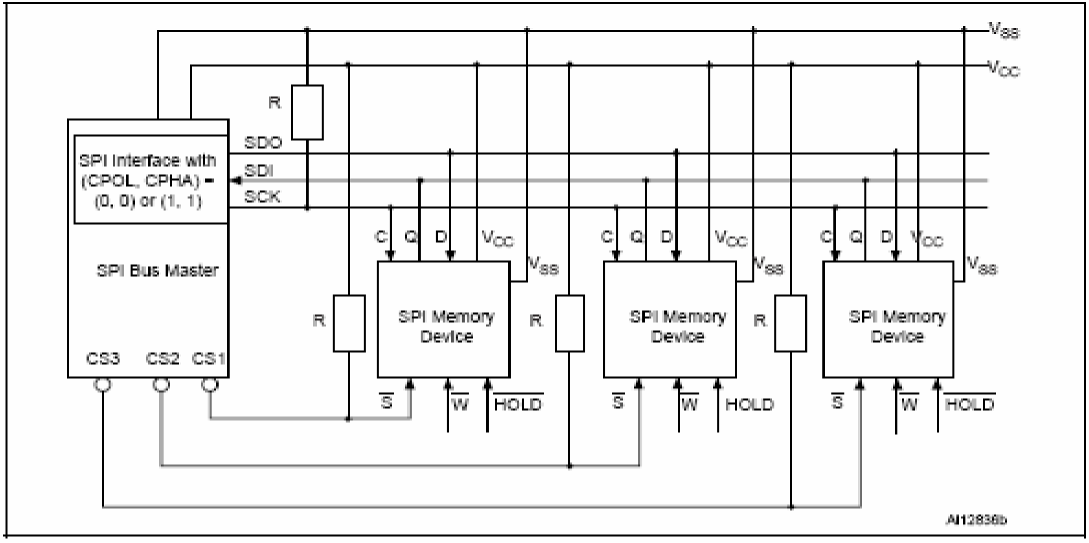
- CPOL=0, CPHA=0
- CPOL=1, CPHA=1

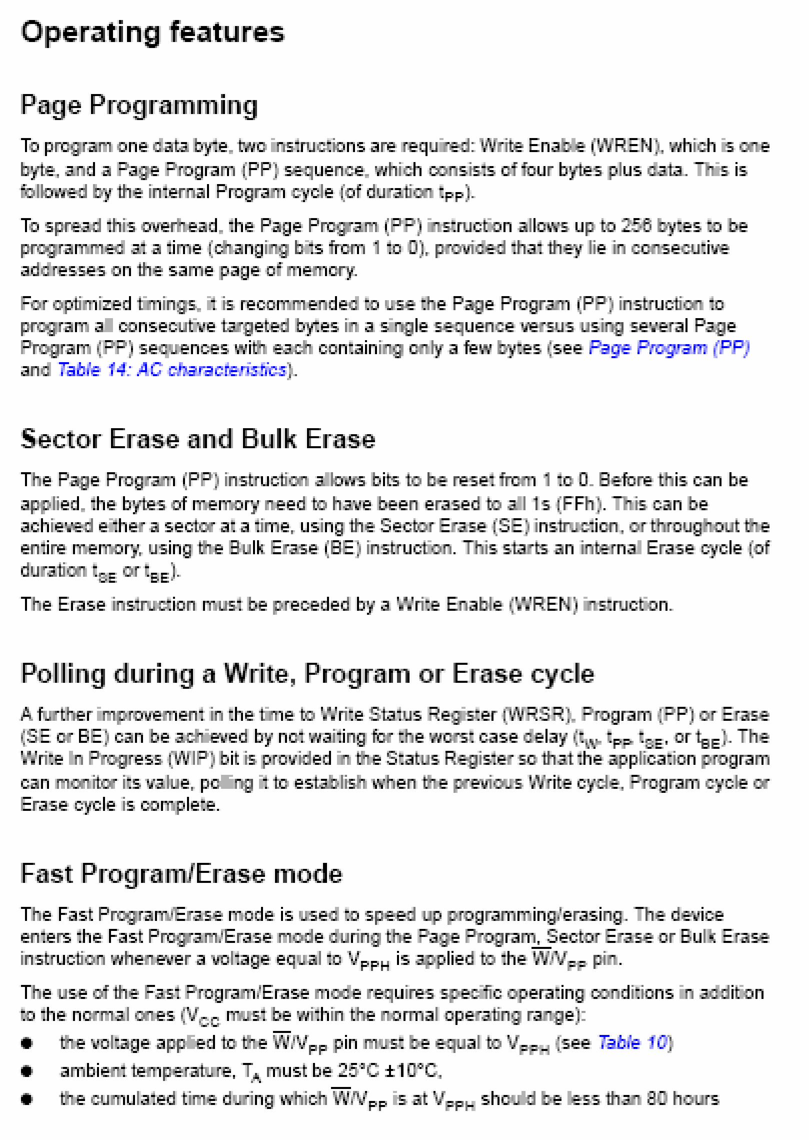
For these two modes, input data is latched in on the rising edge of Serial Clock (C), and output data is available from the falling edge of Serial Clock (C).

The difference between the two modes, as shown in *Figure 5*, is the clock polarity when the bus master is in Stand-by mode and not transferring data:

- C remains at 0 for (CPOL=0, CPHA=0)
- C remains at 1 for (CPOL=1, CPHA=1)

Figure 4. Bus Master and memory devices on the SPI bus





Operating features

Page Programming

To program one data byte, two instructions are required: Write Enable (WREN), which is one byte, and a Page Program (PP) sequence, which consists of four bytes plus data. This is followed by the internal Program cycle (of duration t_{PP}).

To spread this overhead, the Page Program (PP) instruction allows up to 256 bytes to be programmed at a time (changing bits from 1 to 0), provided that they lie in consecutive addresses on the same page of memory.

For optimized timings, it is recommended to use the Page Program (PP) instruction to program all consecutive targeted bytes in a single sequence versus using several Page Program (PP) sequences with each containing only a few bytes (see *Page Program (PP)* and *Table 14: AC characteristics*).

Sector Erase and Bulk Erase

The Page Program (PP) instruction allows bits to be reset from 1 to 0. Before this can be applied, the bytes of memory need to have been erased to all 1s (FFh). This can be achieved either a sector at a time, using the Sector Erase (SE) instruction, or throughout the entire memory, using the Bulk Erase (BE) instruction. This starts an internal Erase cycle (of duration t_{SE} or t_{BE}).

The Erase instruction must be preceded by a Write Enable (WREN) instruction.

Polling during a Write, Program or Erase cycle

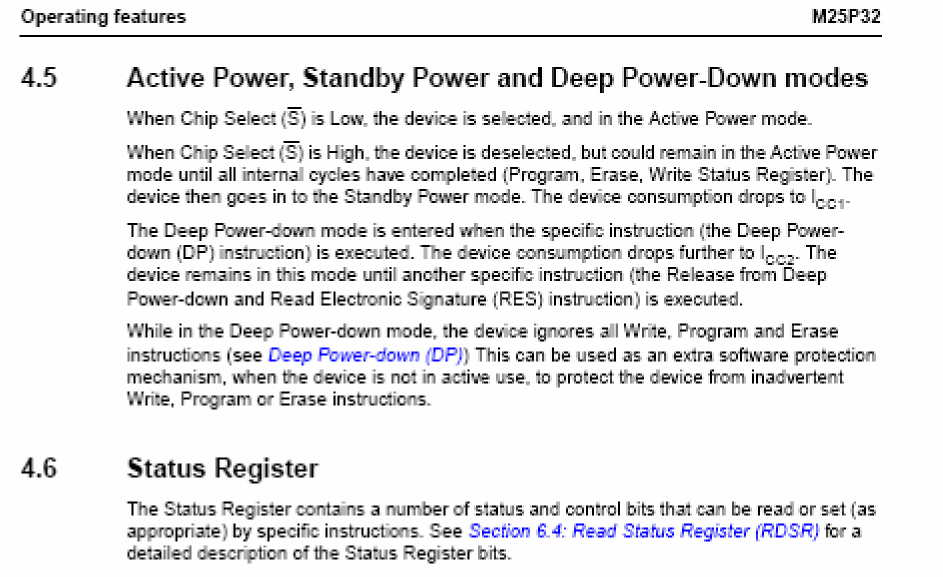
A further improvement in the time to Write Status Register (WRSR), Program (PP) or Erase (SE or BE) can be achieved by not waiting for the worst case delay (t_W, t_{PP}, t_{SE}, or t_{BE}). The Write In Progress (WIP) bit is provided in the Status Register so that the application program can monitor its value, polling it to establish when the previous Write cycle, Program cycle or Erase cycle is complete.

Fast Program/Erase mode

The Fast Program/Erase mode is used to speed up programming/erasing. The device enters the Fast Program/Erase mode during the Page Program, Sector Erase or Bulk Erase instruction whenever a voltage equal to V_{PPH} is applied to the $\overline{W}/V_{PP}$ pin.

The use of the Fast Program/Erase mode requires specific operating conditions in addition to the normal ones (V_{CC} must be within the normal operating range):

- the voltage applied to the $\overline{W}/V_{PP}$ pin must be equal to V_{PPH} (see *Table 10*)
- ambient temperature, T_A must be 25°C ±10°C,
- the cumulated time during which $\overline{W}/V_{PP}$ is at V_{PPH} should be less than 80 hours



4.5 Active Power, Standby Power and Deep Power-Down modes

When Chip Select ($\overline{S}$) is Low, the device is selected, and in the Active Power mode.

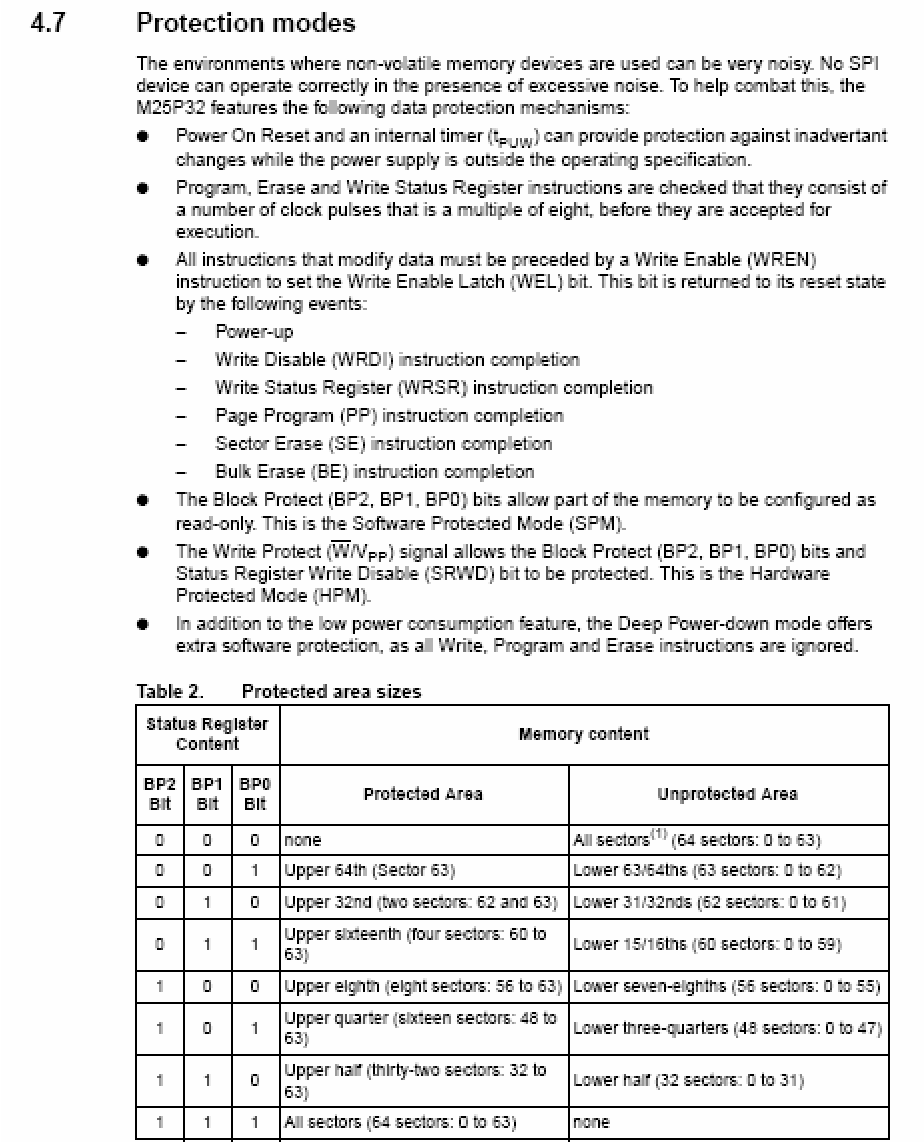
When Chip Select ($\overline{S}$) is High, the device is deselected, but could remain in the Active Power mode until all internal cycles have completed (Program, Erase, Write Status Register). The device then goes in to the Standby Power mode. The device consumption drops to I_{CC1}.

The Deep Power-down mode is entered when the specific instruction (the Deep Power-down (DP) instruction) is executed. The device consumption drops further to I_{CC2}. The device remains in this mode until another specific instruction (the Release from Deep Power-down and Read Electronic Signature (RES) instruction) is executed.

While in the Deep Power-down mode, the device ignores all Write, Program and Erase instructions (see *Deep Power-down (DP)*) This can be used as an extra software protection mechanism, when the device is not in active use, to protect the device from inadvertent Write, Program or Erase instructions.

4.6 Status Register

The Status Register contains a number of status and control bits that can be read or set (as appropriate) by specific instructions. See *Section 6.4: Read Status Register (RDSR)* for a detailed description of the Status Register bits.



4.7 Protection modes

The environments where non-volatile memory devices are used can be very noisy. No SPI device can operate correctly in the presence of excessive noise. To help combat this, the M25P32 features the following data protection mechanisms:

- Power On Reset and an internal timer (t_{PUW}) can provide protection against inadvertant changes while the power supply is outside the operating specification.
- Program, Erase and Write Status Register instructions are checked that they consist of a number of clock pulses that is a multiple of eight, before they are accepted for execution.
- All instructions that modify data must be preceded by a Write Enable (WREN) instruction to set the Write Enable Latch (WEL) bit. This bit is returned to its reset state by the following events:
  - Power-up
  - Write Disable (WRDI) instruction completion
  - Write Status Register (WRSR) instruction completion
  - Page Program (PP) instruction completion
  - Sector Erase (SE) instruction completion
  - Bulk Erase (BE) instruction completion
- The Block Protect (BP2, BP1, BP0) bits allow part of the memory to be configured as read-only. This is the Software Protected Mode (SPM).
- The Write Protect ($\overline{W}/V_{PP}$) signal allows the Block Protect (BP2, BP1, BP0) bits and Status Register Write Disable (SRWD) bit to be protected. This is the Hardware Protected Mode (HPM).
- In addition to the low power consumption feature, the Deep Power-down mode offers extra software protection, as all Write, Program and Erase instructions are ignored.

Table 2. Protected area sizes

Status Register Content			Memory content	
BP2 Bit	**BP1 Bit**	**BP0 Bit**	**Protected Area**	**Unprotected Area**
0	0	0	none	All sectors[1] (64 sectors: 0 to 63)
0	0	1	Upper 64th (Sector 63)	Lower 63/64ths (63 sectors: 0 to 62)
0	1	0	Upper 32nd (two sectors: 62 and 63)	Lower 31/32nds (62 sectors: 0 to 61)
0	1	1	Upper sixteenth (four sectors: 60 to 63)	Lower 15/16ths (60 sectors: 0 to 59)
1	0	0	Upper eighth (eight sectors: 56 to 63)	Lower seven-eighths (56 sectors: 0 to 55)
1	0	1	Upper quarter (sixteen sectors: 48 to 63)	Lower three-quarters (48 sectors: 0 to 47)
1	1	0	Upper half (thirty-two sectors: 32 to 63)	Lower half (32 sectors: 0 to 31)
1	1	1	All sectors (64 sectors: 0 to 63)	none

4.8 Hold condition

The Hold ($\overline{\text{HOLD}}$) signal is used to pause any serial communications with the device without resetting the clocking sequence. However, taking this signal Low does not terminate any Write Status Register, Program or Erase cycle that is currently in progress.

To enter the Hold condition, the device must be selected, with Chip Select ($\overline{\text{S}}$) Low.

The Hold condition starts on the falling edge of the Hold ($\overline{\text{HOLD}}$) signal, provided that this coincides with Serial Clock (C) being Low (as shown in *Figure 6*).

The Hold condition ends on the rising edge of the Hold ($\overline{\text{HOLD}}$) signal, provided that this coincides with Serial Clock (C) being Low.

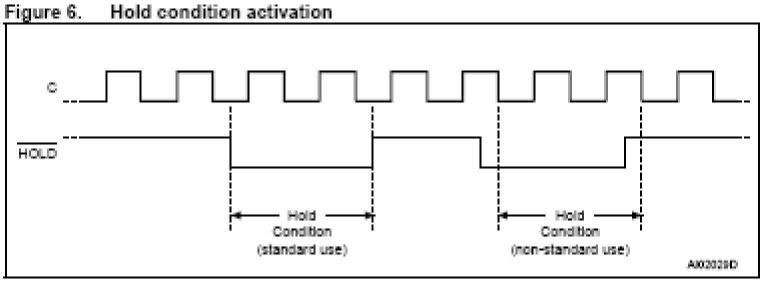
If the falling edge does not coincide with Serial Clock (C) being Low, the Hold condition starts after Serial Clock (C) next goes Low. Similarly, if the rising edge does not coincide with Serial Clock (C) being Low, the Hold condition ends after Serial Clock (C) next goes Low. (This is shown in *Figure 6*).

During the Hold condition, the Serial Data Output (Q) is high impedance, and Serial Data Input (D) and Serial Clock (C) are Don't Care.

Normally, the device is kept selected, with Chip Select ($\overline{\text{S}}$) driven Low, for the whole duration of the Hold condition. This is to ensure that the state of the internal logic remains unchanged from the moment of entering the Hold condition.

If Chip Select ($\overline{\text{S}}$) goes High while the device is in the Hold condition, this has the effect of resetting the internal logic of the device. To restart communication with the device, it is necessary to drive Hold ($\overline{\text{HOLD}}$) High, and then to drive Chip Select ($\overline{\text{S}}$) Low. This prevents the device from going back to the Hold condition.

Figure 6. Hold condition activation


C
$\overline{\text{HOLD}}$
Hold Condition (standard use)
Hold Condition (non-standard use)
AI02029D

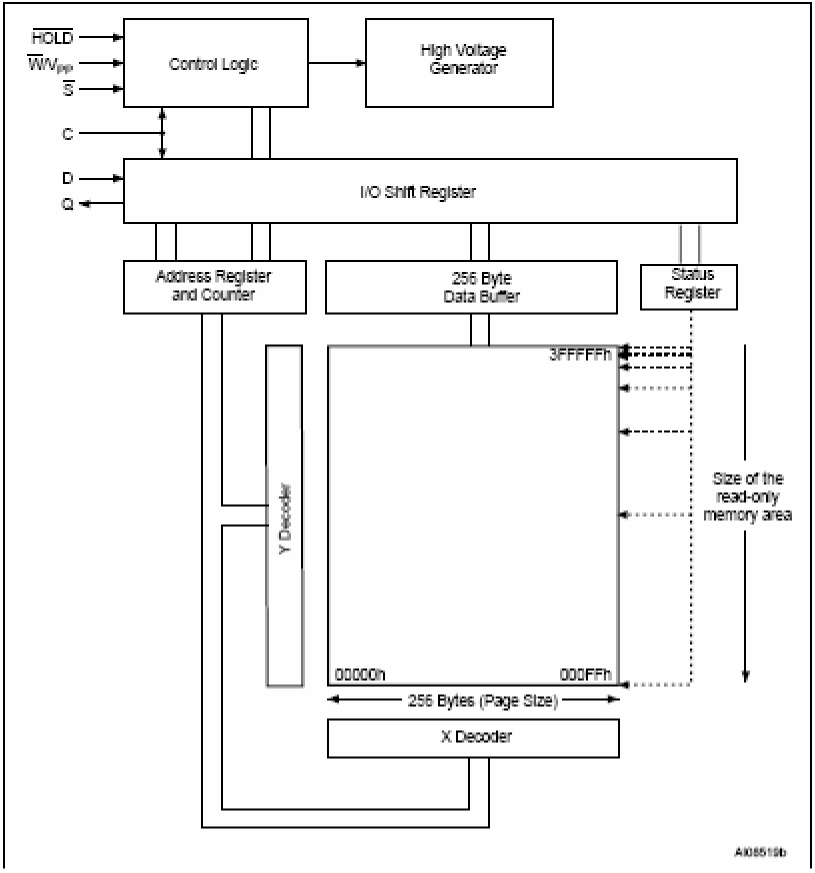
Memory organization

The memory is organized as:

- 4,194,304 bytes (8 bits each)
- 64 sectors (512Kbits, 65536 bytes each)
- 16384 pages (256 bytes each).

Each page can be individually programmed (bits are programmed from 1 to 0). The device is Sector or Bulk Erasable (bits are erased from 0 to 1) but not Page Erasable.

Figure 7. Block diagram



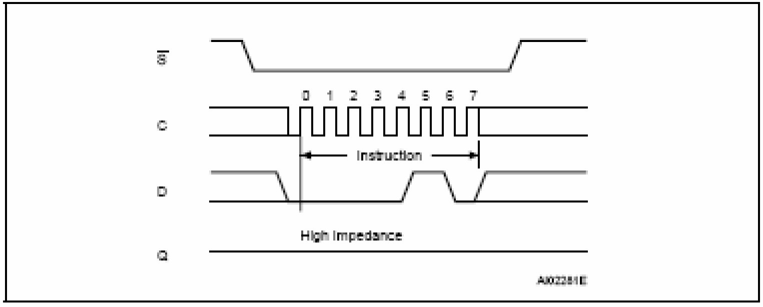
Write Enable (WREN)

The Write Enable (WREN) instruction (*Figure 8*) sets the Write Enable Latch (WEL) bit.

The Write Enable Latch (WEL) bit must be set prior to every Page Program (PP), Sector Erase (SE), Bulk Erase (BE) and Write Status Register (WRSR) instruction.

The Write Enable (WREN) instruction is entered by driving Chip Select ($\overline{S}$) Low, sending the instruction code, and then driving Chip Select ($\overline{S}$) High.

Figure 8. Write Enable (WREN) instruction sequence



Read Identification (RDID)

The Read Identification (RDID) instruction allows to read the device identification data:

- Manufacturer identification (one byte)
- Device identification (two bytes)
- A Unique ID code (UID) followed by 16 bytes of CFI data

The manufacturer identification is assigned by JEDEC, and has the value 20h for STMicroelectronics. The device identification is assigned by the device manufacturer, and indicates the memory type in the first byte (20h), and the memory capacity of the device in the second byte (16h). The UID is set to 10h and indicates that 16 bytes, related to the CFI content, are following.

Any Read Identification (RDID) instruction while an Erase or Program cycle is in progress, is not decoded, and has no effect on the cycle that is in progress.

The device is first selected by driving Chip Select ($\overline{S}$) Low. Then, the 8-bit instruction code for the instruction is shifted in. After this, the 24-bit device identification, stored in the memory, the 8-bit Unique ID code followed by 16 bytes of CFI content will be shifted out on Serial Data Output (Q). Each bit is shifted out during the falling edge of Serial Clock (C).

The instruction sequence is shown in *Figure 10*.

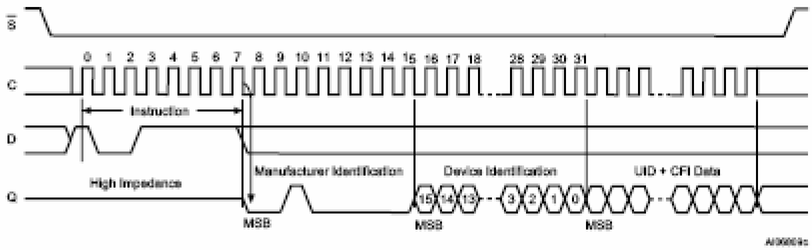
The Read Identification (RDID) instruction is terminated by driving Chip Select ($\overline{S}$) High at any time during data output.

When Chip Select ($\overline{S}$) is driven High, the device is put in the Standby Power mode. Once in the Standby Power mode, the device waits to be selected, so that it can receive, decode and execute instructions.

Table 5. Read Identification (RDID) data-out sequence

Manufacturer identification	Device identification		UID	CFI content
	Memory type	Memory capacity		
20h	20h	16h	10h	16 bytes

Figure 10. Read Identification (RDID) instruction sequence and data-out sequence



Sector Erase (SE)

The Sector Erase (SE) instruction sets to 1 (FFh) all bits inside the chosen sector. Before it can be accepted, a Write Enable (WREN) instruction must previously have been executed. After the Write Enable (WREN) instruction has been decoded, the device sets the Write Enable Latch (WEL).

The Sector Erase (SE) instruction is entered by driving Chip Select ($\overline{S}$) Low, followed by the instruction code, and three address bytes on Serial Data Input (D). Any address inside the Sector (see *Table 3*) is a valid address for the Sector Erase (SE) instruction. Chip Select ($\overline{S}$) must be driven Low for the entire duration of the sequence.

The instruction sequence is shown in *Figure 16*.

Chip Select ($\overline{S}$) must be driven High after the eighth bit of the last address byte has been latched in, otherwise the Sector Erase (SE) instruction is not executed. As soon as Chip Select ($\overline{S}$) is driven High, the self-timed Sector Erase cycle (whose duration is t_{SE}) is initiated. While the Sector Erase cycle is in progress, the Status Register may be read to check the value of the Write In Progress (WIP) bit. The Write In Progress (WIP) bit is 1 during the self-timed Sector Erase cycle, and is 0 when it is completed. At some unspecified time before the cycle is completed, the Write Enable Latch (WEL) bit is reset.

A Sector Erase (SE) instruction applied to a page which is protected by the Block Protect (BP2, BP1, BP0) bits (see *Table 2* and *Table 3*) is not executed.

Read Data Bytes (READ)

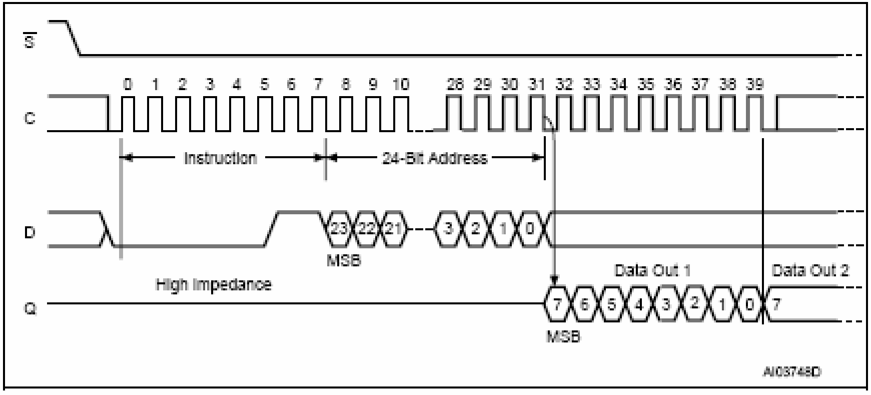
The device is first selected by driving Chip Select ($\overline{S}$) Low. The instruction code for the Read Data Bytes (READ) instruction is followed by a 3-byte address (A23-A0), each bit being latched-in during the rising edge of Serial Clock (C). Then the memory contents, at that address, is shifted out on Serial Data Output (Q), each bit being shifted out, at a maximum frequency f_R, during the falling edge of Serial Clock (C).

The instruction sequence is shown in *Figure 13*.

The first byte addressed can be at any location. The address is automatically incremented to the next higher address after each byte of data is shifted out. The whole memory can, therefore, be read with a single Read Data Bytes (READ) instruction. When the highest address is reached, the address counter rolls over to 000000h, allowing the read sequence to be continued indefinitely.

The Read Data Bytes (READ) instruction is terminated by driving Chip Select ($\overline{S}$) High. Chip Select ($\overline{S}$) can be driven High at any time during data output. Any Read Data Bytes (READ) instruction, while an Erase, Program or Write cycle is in progress, is rejected without having any effects on the cycle that is in progress.

Figure 13. Read Data Bytes (READ) instruction sequence and data-out sequence



1. Address bits A23 to A22 are Don't Care.

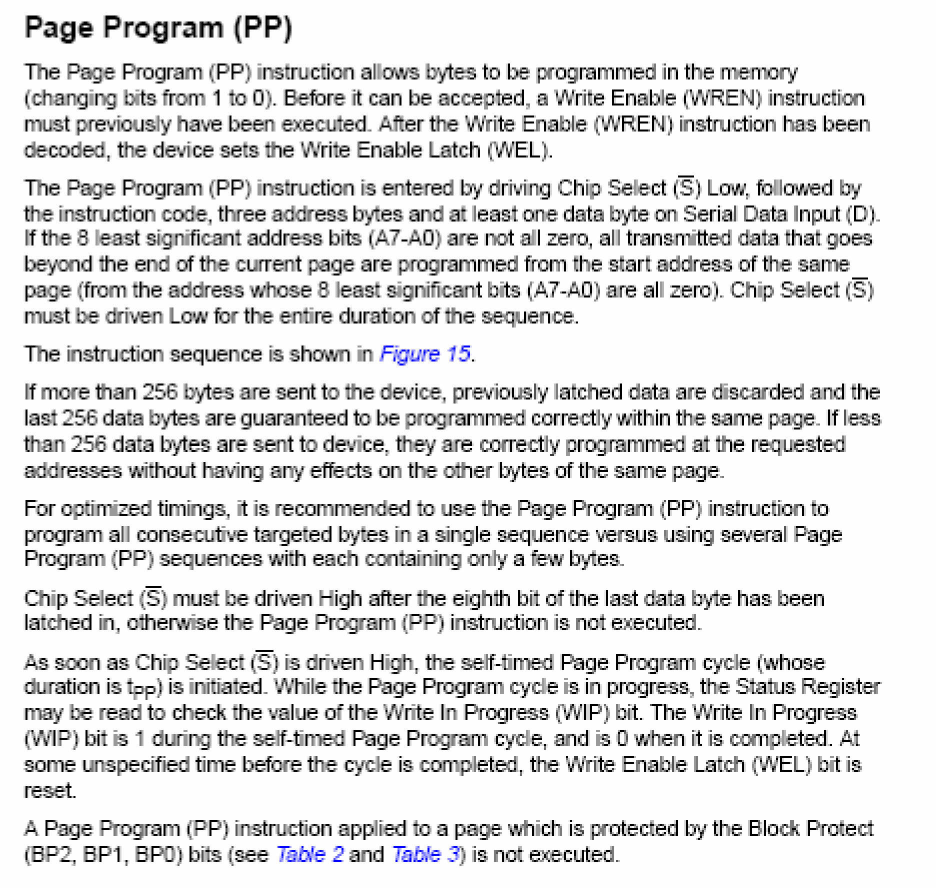
Read Data Bytes at Higher Speed (FAST_READ)

The device is first selected by driving Chip Select ($\overline{S}$) Low. The instruction code for the Read Data Bytes at Higher Speed (FAST_READ) instruction is followed by a 3-byte address (A23-A0) and a dummy byte, each bit being latched-in during the rising edge of Serial Clock (C). Then the memory contents, at that address, is shifted out on Serial Data Output (Q), each bit being shifted out, at a maximum frequency f_C, during the falling edge of Serial Clock (C).

The instruction sequence is shown in *Figure 14*.

The first byte addressed can be at any location. The address is automatically incremented to the next higher address after each byte of data is shifted out. The whole memory can, therefore, be read with a single Read Data Bytes at Higher Speed (FAST_READ) instruction. When the highest address is reached, the address counter rolls over to 000000h, allowing the read sequence to be continued indefinitely.

The Read Data Bytes at Higher Speed (FAST_READ) instruction is terminated by driving Chip Select ($\overline{S}$) High. Chip Select ($\overline{S}$) can be driven High at any time during data output. Any Read Data Bytes at Higher Speed (FAST_READ) instruction, while an Erase, Program or Write cycle is in progress, is rejected without having any effects on the cycle that is in progress.



Page Program (PP)

The Page Program (PP) instruction allows bytes to be programmed in the memory (changing bits from 1 to 0). Before it can be accepted, a Write Enable (WREN) instruction must previously have been executed. After the Write Enable (WREN) instruction has been decoded, the device sets the Write Enable Latch (WEL).

The Page Program (PP) instruction is entered by driving Chip Select ($\overline{S}$) Low, followed by the instruction code, three address bytes and at least one data byte on Serial Data Input (D). If the 8 least significant address bits (A7-A0) are not all zero, all transmitted data that goes beyond the end of the current page are programmed from the start address of the same page (from the address whose 8 least significant bits (A7-A0) are all zero). Chip Select ($\overline{S}$) must be driven Low for the entire duration of the sequence.

The instruction sequence is shown in *Figure 15*.

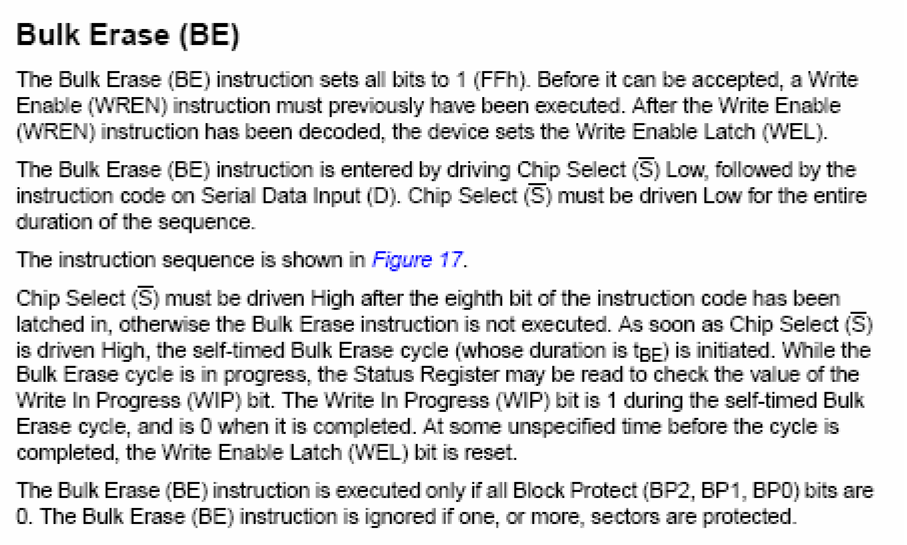
If more than 256 bytes are sent to the device, previously latched data are discarded and the last 256 data bytes are guaranteed to be programmed correctly within the same page. If less than 256 data bytes are sent to device, they are correctly programmed at the requested addresses without having any effects on the other bytes of the same page.

For optimized timings, it is recommended to use the Page Program (PP) instruction to program all consecutive targeted bytes in a single sequence versus using several Page Program (PP) sequences with each containing only a few bytes.

Chip Select ($\overline{S}$) must be driven High after the eighth bit of the last data byte has been latched in, otherwise the Page Program (PP) instruction is not executed.

As soon as Chip Select ($\overline{S}$) is driven High, the self-timed Page Program cycle (whose duration is t_{PP}) is initiated. While the Page Program cycle is in progress, the Status Register may be read to check the value of the Write In Progress (WIP) bit. The Write In Progress (WIP) bit is 1 during the self-timed Page Program cycle, and is 0 when it is completed. At some unspecified time before the cycle is completed, the Write Enable Latch (WEL) bit is reset.

A Page Program (PP) instruction applied to a page which is protected by the Block Protect (BP2, BP1, BP0) bits (see *Table 2* and *Table 3*) is not executed.



Bulk Erase (BE)

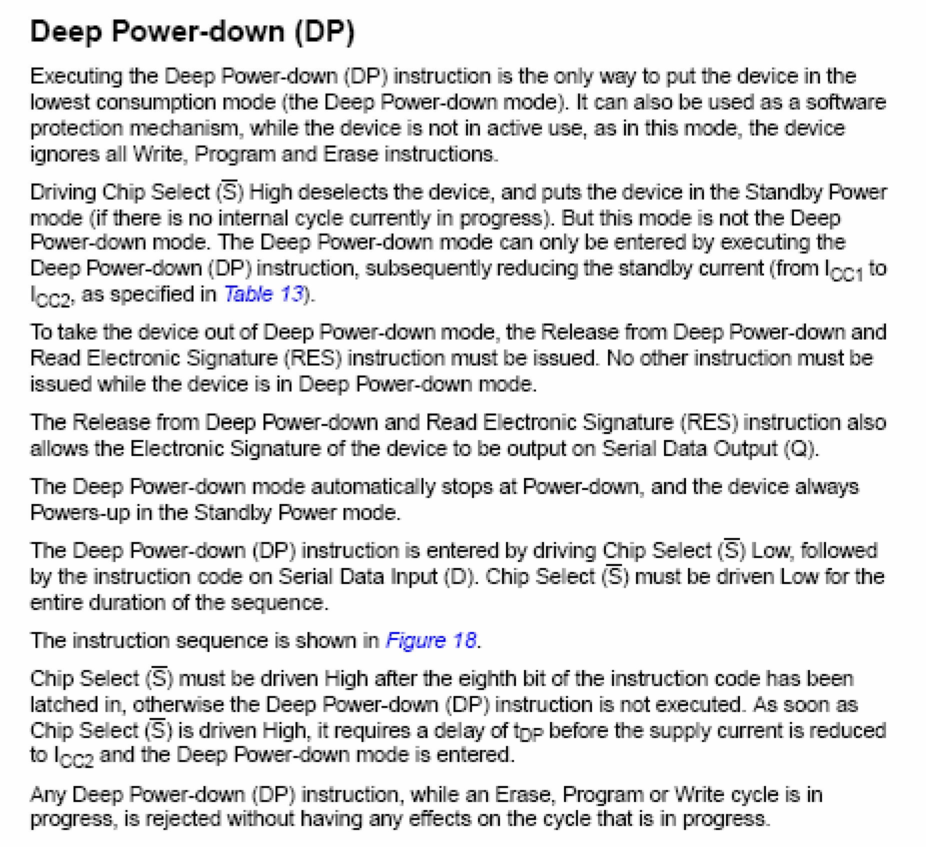
The Bulk Erase (BE) instruction sets all bits to 1 (FFh). Before it can be accepted, a Write Enable (WREN) instruction must previously have been executed. After the Write Enable (WREN) instruction has been decoded, the device sets the Write Enable Latch (WEL).

The Bulk Erase (BE) instruction is entered by driving Chip Select ($\overline{S}$) Low, followed by the instruction code on Serial Data Input (D). Chip Select ($\overline{S}$) must be driven Low for the entire duration of the sequence.

The instruction sequence is shown in *Figure 17*.

Chip Select ($\overline{S}$) must be driven High after the eighth bit of the instruction code has been latched in, otherwise the Bulk Erase instruction is not executed. As soon as Chip Select ($\overline{S}$) is driven High, the self-timed Bulk Erase cycle (whose duration is t_{BE}) is initiated. While the Bulk Erase cycle is in progress, the Status Register may be read to check the value of the Write In Progress (WIP) bit. The Write In Progress (WIP) bit is 1 during the self-timed Bulk Erase cycle, and is 0 when it is completed. At some unspecified time before the cycle is completed, the Write Enable Latch (WEL) bit is reset.

The Bulk Erase (BE) instruction is executed only if all Block Protect (BP2, BP1, BP0) bits are 0. The Bulk Erase (BE) instruction is ignored if one, or more, sectors are protected.



Deep Power-down (DP)

Executing the Deep Power-down (DP) instruction is the only way to put the device in the lowest consumption mode (the Deep Power-down mode). It can also be used as a software protection mechanism, while the device is not in active use, as in this mode, the device ignores all Write, Program and Erase instructions.

Driving Chip Select ($\overline{S}$) High deselects the device, and puts the device in the Standby Power mode (if there is no internal cycle currently in progress). But this mode is not the Deep Power-down mode. The Deep Power-down mode can only be entered by executing the Deep Power-down (DP) instruction, subsequently reducing the standby current (from I_{CC1} to I_{CC2}, as specified in *Table 13*).

To take the device out of Deep Power-down mode, the Release from Deep Power-down and Read Electronic Signature (RES) instruction must be issued. No other instruction must be issued while the device is in Deep Power-down mode.

The Release from Deep Power-down and Read Electronic Signature (RES) instruction also allows the Electronic Signature of the device to be output on Serial Data Output (Q).

The Deep Power-down mode automatically stops at Power-down, and the device always Powers-up in the Standby Power mode.

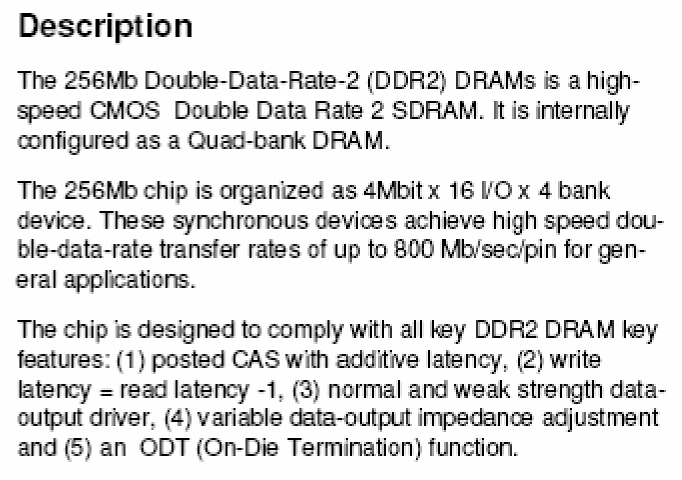
The Deep Power-down (DP) instruction is entered by driving Chip Select ($\overline{S}$) Low, followed by the instruction code on Serial Data Input (D). Chip Select ($\overline{S}$) must be driven Low for the entire duration of the sequence.

The instruction sequence is shown in *Figure 18*.

Chip Select ($\overline{S}$) must be driven High after the eighth bit of the instruction code has been latched in, otherwise the Deep Power-down (DP) instruction is not executed. As soon as Chip Select ($\overline{S}$) is driven High, it requires a delay of t_{DP} before the supply current is reduced to I_{CC2} and the Deep Power-down mode is entered.

Any Deep Power-down (DP) instruction, while an Erase, Program or Write cycle is in progress, is rejected without having any effects on the cycle that is in progress.

DRAM: (NT5TU16M16AG)



Description

The 256Mb Double-Data-Rate-2 (DDR2) DRAMs is a high-speed CMOS Double Data Rate 2 SDRAM. It is internally configured as a Quad-bank DRAM.

The 256Mb chip is organized as 4Mbit x 16 I/O x 4 bank device. These synchronous devices achieve high speed double-data-rate transfer rates of up to 800 Mb/sec/pin for general applications.

The chip is designed to comply with all key DDR2 DRAM key features: (1) posted CAS with additive latency, (2) write latency = read latency -1, (3) normal and weak strength data-output driver, (4) variable data-output impedance adjustment and (5) an ODT (On-Die Termination) function.

All of the control and address inputs are synchronized with a pair of externally supplied differential clocks. Inputs are latched at the cross point of differential clocks (CK rising and $\overline{\text{CK}}$ falling). All I/Os are synchronized with a single ended LDQS / UDQS or differential LDQS / UDQS pair in a source synchronous fashion. A 12 bit address bus for x16 organised components is used to convey row, column, and bank address devices.

An Auto-Refresh and Self-Refresh mode is provided along with various power-saving power-down modes.

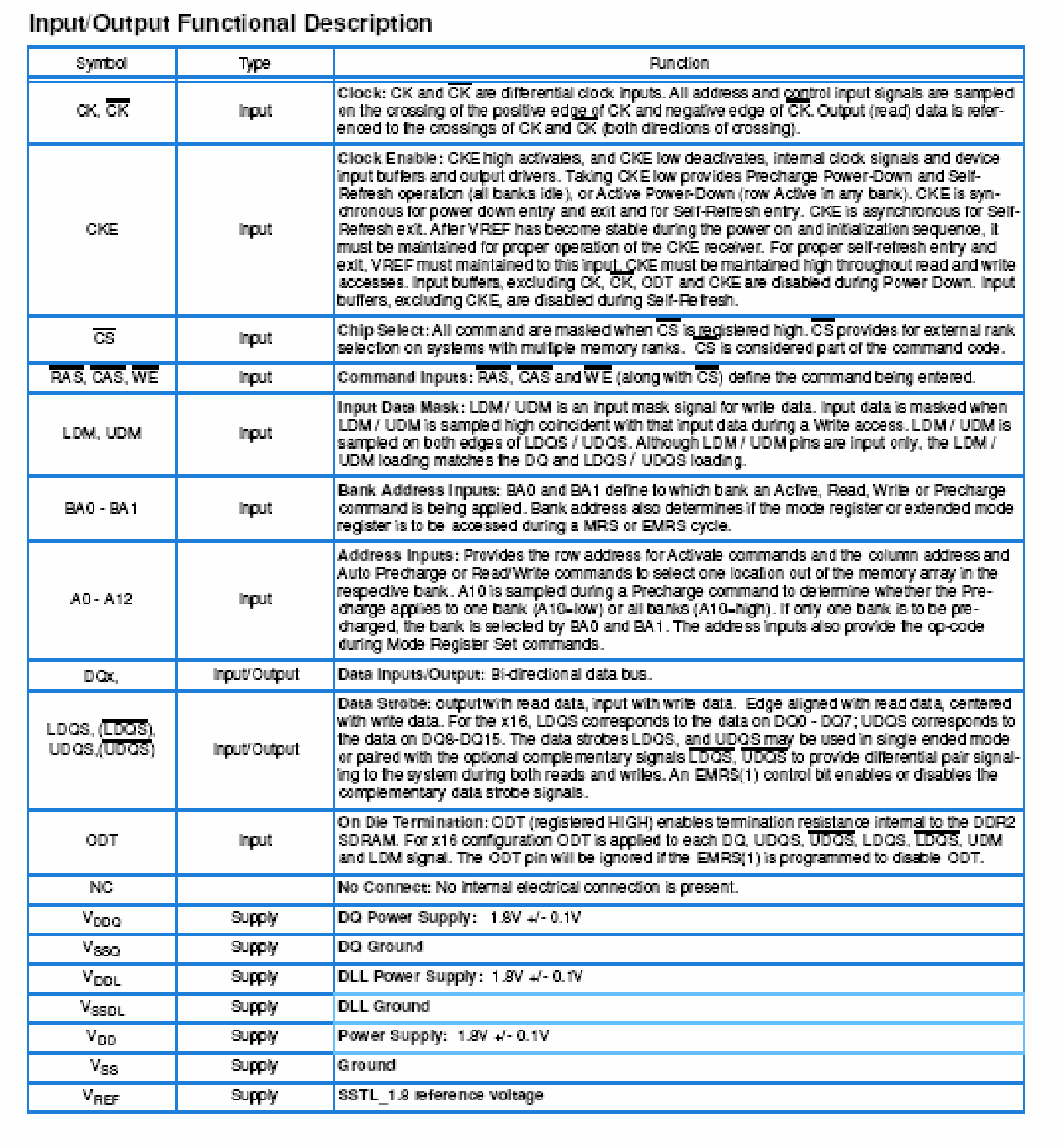
Pin Configuration - 84 Balls BGA Package (x16)

<Top View >

See the balls through the package.

x 16

1	2	3		7	8	9
VDD	NC	VSS	D	VSSQ	$\overline{\text{UDQS}}$	VDDQ
DQ14	VSSQ	UDM	E	UDQS	VSSQ	DQ15
VDDQ	DQ9	VDDQ	F	VDDQ	DQ8	VDDQ
DQ12	VSSQ	DQ11	G	DQ10	VSSQ	DQ13
VDD	NC	VSS	H	VSSQ	$\overline{\text{LDQS}}$	VDDQ
DQ6	VSSQ	LDM	J	LDQS	VSSQ	DQ7
VDDQ	DQ1	VDDQ	K	VDDQ	DQ0	VDDQ
DQ4	VSSQ	DQ3	L	DQ2	VSSQ	DQ5
VDDL	VREF	VSS	M	VSSDL	CK	VDD
	CKE	$\overline{\text{WE}}$	N	$\overline{\text{RAS}}$	$\overline{\text{CK}}$	ODT
NC	BA0	BA1	P	$\overline{\text{CAS}}$	$\overline{\text{CS}}$	
	A10 / AP	A1	R	A2	A0	VDD
VSS	A3	A5	T	A6	A4	
	A7	A9	U	A11	A8	VSS
VDD	A12	NC	V	NC	NC	



Input/Output Functional Description

Symbol	Type	Function
CK, $\overline{CK}$	Input	**Clock:** CK and $\overline{CK}$ are differential clock inputs. All address and control input signals are sampled on the crossing of the positive edge of CK and negative edge of $\overline{CK}$. Output (read) data is referenced to the crossings of CK and $\overline{CK}$ (both directions of crossing).
CKE	Input	**Clock Enable:** CKE high activates, and CKE low deactivates, internal clock signals and device input buffers and output drivers. Taking CKE low provides Precharge Power-Down and Self-Refresh operation (all banks idle), or Active Power-Down (row Active in any bank). CKE is synchronous for power down entry and exit and for Self-Refresh entry. CKE is asynchronous for Self-Refresh exit. After VREF has become stable during the power on and initialization sequence, it must be maintained for proper operation of the CKE receiver. For proper self-refresh entry and exit, VREF must maintained to this input. CKE must be maintained high throughout read and write accesses. Input buffers, excluding CK, $\overline{CK}$, ODT and CKE are disabled during Power Down. Input buffers, excluding CKE, are disabled during Self-Refresh.
$\overline{CS}$	Input	**Chip Select:** All command are masked when $\overline{CS}$ is registered high. $\overline{CS}$ provides for external rank selection on systems with multiple memory ranks. $\overline{CS}$ is considered part of the command code.
$\overline{RAS}$, $\overline{CAS}$, $\overline{WE}$	Input	**Command Inputs:** $\overline{RAS}$, $\overline{CAS}$ and $\overline{WE}$ (along with $\overline{CS}$) define the command being entered.
LDM, UDM	Input	**Input Data Mask:** LDM / UDM is an input mask signal for write data. Input data is masked when LDM / UDM is sampled high coincident with that input data during a Write access. LDM / UDM is sampled on both edges of LDQS / UDQS. Although LDM / UDM pins are input only, the LDM / UDM loading matches the DQ and LDQS / UDQS loading.
BA0 - BA1	Input	**Bank Address Inputs:** BA0 and BA1 define to which bank an Active, Read, Write or Precharge command is being applied. Bank address also determines if the mode register or extended mode register is to be accessed during a MRS or EMRS cycle.
A0 - A12	Input	**Address Inputs:** Provides the row address for Activate commands and the column address and Auto Precharge or Read/Write commands to select one location out of the memory array in the respective bank.. A10 is sampled during a Precharge command to determine whether the Precharge applies to one bank (A10=low) or all banks (A10=high). If only one bank is to be precharged, the bank is selected by BA0 and BA1. The address inputs also provide the op-code during Mode Register Set commands.
DQx,	Input/Output	**Data Inputs/Output:** Bi-directional data bus.
LDQS, ($\overline{LDQS}$), UDQS,($\overline{UDQS}$)	Input/Output	**Data Strobe:** output with read data, input with write data. Edge aligned with read data, centered with write data. For the x16, LDQS corresponds to the data on DQ0 - DQ7; UDQS corresponds to the data on DQ8-DQ15. The data strobes LDQS, and UDQS may be used in single ended mode or paired with the optional complementary signals $\overline{LDQS}$, $\overline{UDQS}$ to provide differential pair signaling to the system during both reads and writes. An EMRS(1) control bit enables or disables the complementary data strobe signals.
ODT	Input	**On Die Termination:** ODT (registered HIGH) enables termination resistance internal to the DDR2 SDRAM. For x16 configuration ODT is applied to each DQ, UDQS, $\overline{UDQS}$, LDQS, $\overline{LDQS}$, UDM and LDM signal. The ODT pin will be ignored if the EMRS(1) is programmed to disable ODT.
NC		**No Connect:** No internal electrical connection is present.
V_{DDQ}	Supply	**DQ Power Supply:** 1.8V +/- 0.1V
V_{SSQ}	Supply	**DQ Ground**
V_{DDL}	Supply	**DLL Power Supply:** 1.8V +/- 0.1V
V_{SSDL}	Supply	**DLL Ground**
V_{DD}	Supply	**Power Supply:** 1.8V +/- 0.1V
V_{SS}	Supply	**Ground**
V_{REF}	Supply	**SSTL_1.8 reference voltage**

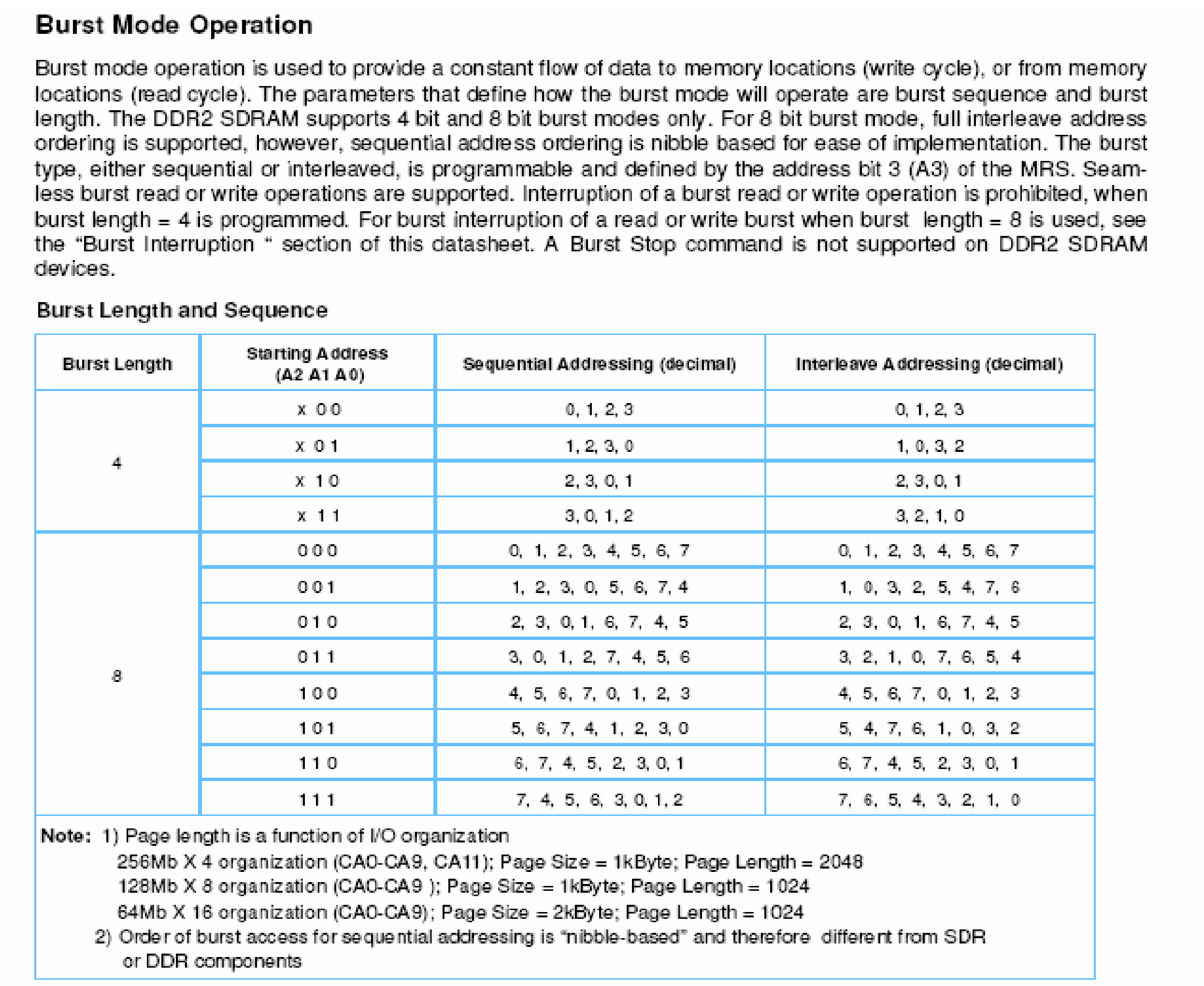
Register Definition

Programming the Mode Register and Extended Mode Registers

For application flexibility, burst length, burst type, $\overline{\text{CAS}}$ latency, DLL reset function, write recovery time (tWR) are user defined variables and must be programmed with a Mode Register Set (MRS) command. Additionally, DLL disable function, additive $\overline{\text{CAS}}$ latency, driver impedance, ODT (On Die Termination), single-ended strobe and OCD (off chip driver impedance adjustment) are also user defined variables and must be programmed with an Extended Mode Register Set (EMRS) command. Contents of the Mode Register (MR) and Extended Mode Registers (EMR(#)) can be altered by re-executing the MRS and EMRS Commands. If the user chooses to modify only a subset of the MRS or EMRS variables, all variables must be redefined when the MRS or EMRS commands are issued. MRS, EMRS and DLL Reset do not affect array contents, which means reinitializazion including those can be executed any time after power-up without affecting array contents.

Mode Register Set (MRS)

The mode register stores the data for controlling the various operating modes of DDR2 SDRAM. It contorls $\overline{\text{CAS}}$ latency, burst length, burst sequence, test mode, DLL reset, tWR and various vendor specific options to make DDR2 SDRAM useful for various applications. The default value of the mode register is not defined, therefore the mode register must be written after power-up for proper operation. The mode register is written by asserting low on $\overline{\text{CS}}$, $\overline{\text{RAS}}$, $\overline{\text{CAS}}$, $\overline{\text{WE}}$, BA0 and BA1, while controlling the state of address pins A0 ~ A12. The DDR2 SDRAM should be in all bank precharged (idle) mode with CKE already high prior to writing into the mode register. The mode register set command cycle time (t_{MRD}) is required to complete the write operation to the mode register. The mode register contents can be changed using the same command and clock cycle requirements during normal operation as long as all banks are in the precharged state. The mode register is divided into various fields depending on functionality. Burst length is defined by A0 ~ A2 with options of 4 and 8 bit burst length. Burst address sequence type is defined by A3 and $\overline{\text{CAS}}$ latency is defined by A4 ~ A6. A7 is used for test mode and must be set to low for normal MRS operation. A8 is used for DLL reset. A9 ~ A11 are used for write recovery time (WR) definition for Auto-Precharge mode.



Burst Mode Operation

Burst mode operation is used to provide a constant flow of data to memory locations (write cycle), or from memory locations (read cycle). The parameters that define how the burst mode will operate are burst sequence and burst length. The DDR2 SDRAM supports 4 bit and 8 bit burst modes only. For 8 bit burst mode, full interleave address ordering is supported, however, sequential address ordering is nibble based for ease of implementation. The burst type, either sequential or interleaved, is programmable and defined by the address bit 3 (A3) of the MRS. Seamless burst read or write operations are supported. Interruption of a burst read or write operation is prohibited, when burst length = 4 is programmed. For burst interruption of a read or write burst when burst length = 8 is used, see the "Burst Interruption " section of this datasheet. A Burst Stop command is not supported on DDR2 SDRAM devices.

Burst Length and Sequence

Burst Length	Starting Address (A2 A1 A0)	Sequential Addressing (decimal)	Interleave Addressing (decimal)
4	x 0 0	0, 1, 2, 3	0, 1, 2, 3
	x 0 1	1, 2, 3, 0	1, 0, 3, 2
	x 1 0	2, 3, 0, 1	2, 3, 0, 1
	x 1 1	3, 0, 1, 2	3, 2, 1, 0
8	0 0 0	0, 1, 2, 3, 4, 5, 6, 7	0, 1, 2, 3, 4, 5, 6, 7
	0 0 1	1, 2, 3, 0, 5, 6, 7, 4	1, 0, 3, 2, 5, 4, 7, 6
	0 1 0	2, 3, 0, 1, 6, 7, 4, 5	2, 3, 0, 1, 6, 7, 4, 5
	0 1 1	3, 0, 1, 2, 7, 4, 5, 6	3, 2, 1, 0, 7, 6, 5, 4
	1 0 0	4, 5, 6, 7, 0, 1, 2, 3	4, 5, 6, 7, 0, 1, 2, 3
	1 0 1	5, 6, 7, 4, 1, 2, 3, 0	5, 4, 7, 6, 1, 0, 3, 2
	1 1 0	6, 7, 4, 5, 2, 3, 0, 1	6, 7, 4, 5, 2, 3, 0, 1
	1 1 1	7, 4, 5, 6, 3, 0, 1, 2	7, 6, 5, 4, 3, 2, 1, 0

Note: 1) Page length is a function of I/O organization

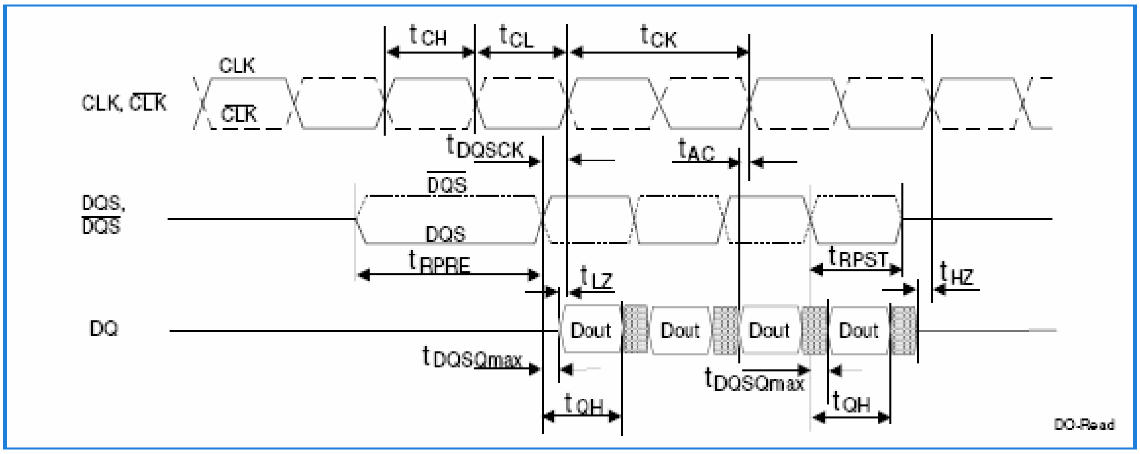
256Mb X 4 organization (CA0-CA9, CA11); Page Size = 1kByte; Page Length = 2048
128Mb X 8 organization (CA0-CA9); Page Size = 1kByte; Page Length = 1024
64Mb X 16 organization (CA0-CA9); Page Size = 2kByte; Page Length = 1024

2) Order of burst access for sequential addressing is "nibble-based" and therefore different from SDR or DDR components

Burst Read Command

The Burst Read command is initiated by having $\overline{\text{CS}}$ and $\overline{\text{CAS}}$ low while holding $\overline{\text{RAS}}$ and $\overline{\text{WE}}$ high at the rising edge of the clock. The address inputs determine the starting column address for the burst. The delay from the start of the command until the data from the first cell appears on the outputs is equal to the value of the read latency (RL). The data strobe output (LDQS & UDQS) are driven low one clock cycle before valid data (DQ) is driven onto the data bus. The first bit of the burst is synchronized with the rising edge of the data strobe (LDQS & UDQS). Each subsequent data-out appears on the DQ pin in phase with the LDQS/UDQS signal in a source synchronous manner. The RL is equal to an additive latency (AL) plus $\overline{\text{CAS}}$ latency (CL). The CL is defined by the Mode Register Set (MRS). The AL is defined by the Extended Mode Register Set (EMRS(1))

Basic Burst Read Timing



Burst Write Command

The Burst Write command is initiated by having $\overline{\text{CS}}$, $\overline{\text{CAS}}$ and $\overline{\text{WE}}$ low while holding $\overline{\text{RAS}}$ high at the rising edge of the clock. The address inputs determine the starting column address. Write latency (WL) is defined by a read latency (RL) minus one and is equal to (AL + CL -1). A data strobe signal (LDQS/UDQS) has to be driven low (preamble) a time tWPRE prior to the WL. The first data bit of the burst cycle must be applied to the DQ pins at the first rising edge of the LDQS/UDQS following the preamble. The tDQSS specification must be satisfied for write cycles. The subsequent burst bit data are issued on successive edges of the LDQS/UDQS until the burst length is completed, which is 4 or 8 bit burst. When the burst has finished, any additional data supplied to the DQ pins will be ignored. The DQ signal is ignored after the burst write operation is complete. The time from the completion of the burst write to bank precharge is named "write recovery time" (WR) .

DDR2 SDRAM pin timings are specified for either single ended mode or differential mode depending on the setting of the EMRS "Enable DQS" mode bit; timing advantages of differential mode are realized in system design. The method by which the DDR2 SDRAM pin timing are measured is mode dependent.

Write Data Mask

One write data mask input (LDM / UDM) pin for each 8 data bits (DQ) will be supported on DDR2 SDRAMs, consistent with the implementation on DDR SDRAMs. It has identical timings on write operations as the data bits, and though used in a uni-directional manner, is internally loaded identically to data bits to insure matched system timing. LDM / UDM of x16 bit organization is not used during read cycles.

Precharge Command

The Precharge Command is used to precharge or close a bank that has been activated. The Precharge Command is triggered when $\overline{CS}$, $\overline{RAS}$ and $\overline{WE}$ are low and $\overline{CAS}$ is high at the rising edge of the clock. The Pre-charge Command can be used to precharge each bank independently or all banks simultaneously. Three address bits A10, BA0, BA1 are used to define which bank to precharge when the command is issued.

Bank Selection for Precharge by Address Bit

Auto-Precharge Operation

Before a new row in an active bank can be opened, the active bank must be precharged using either the Pre-charge Command or the Auto-Precharge function. When a Read or a Write Command is given to the DDR2 SDRAM, the $\overline{CAS}$ timing accepts one extra address, column address A10, to allow the active bank to auto-matically begin precharge at the earliest possible moment during the burst read or write cycle. If A10 is low when the Read or Write Command is issued, then normal Read or Write burst operation is executed and the bank remains active at the completion of the burst sequence. If A10 is high when the Read or Write Com-mand is issued, then the Auto-Precharge function is enabled. During Auto-Precharge, a Read Command will execute as normal with the exception that the active bank will begin to precharge internally on the rising edge which is CAS Latency (CL) clock cycles before the end of the read burst. Auto-Precharge is also implemented for Write Commands.The precharge operation engaged by the Auto-Precharge command will not begin until the last data of the write burst sequence is properly stored in the memory array. This feature allows the precharge operation to be partially or completely hidden during burst read cycles (dependent upon CAS Latency) thus improving system performance for random data access. The RAS lockout circuit internally delays thepprecharge operation until the array restore operation has been completed so that the Auto-Precharge command may be issued with any read or write command.

Burst Read with Auto-Precharge

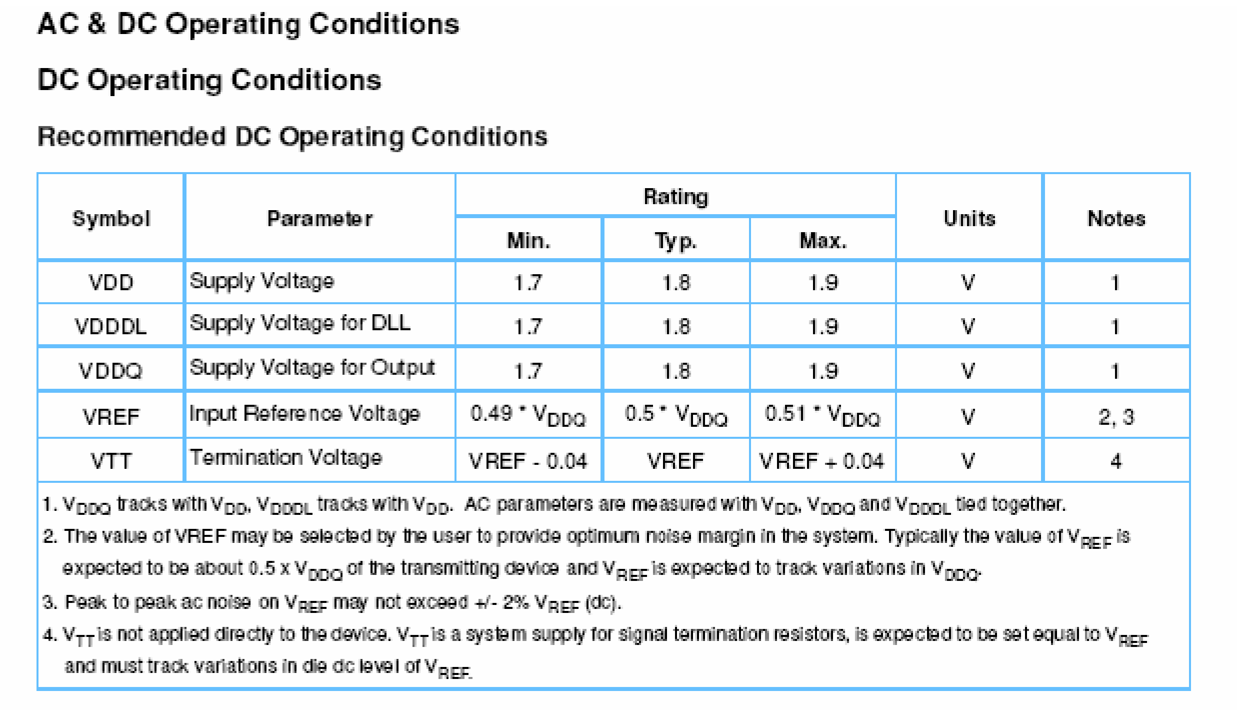
If A10 is high when a Read Command is issued, the Read with Auto-Precharge function is engaged. The DDR2 SDRAM starts an Auto-Precharge operation on the rising edge which is (AL + BL/2) cycles later from the Read with AP command if t_{RAS}(min) and t_{RTP} are satisfied. If t_{RAS}(min) is not satisfied at the edge, the start point of Auto-Precharge operation will be delayed until t_{RAS}(min) is satisfied. If t_{RTP}(min) is not satisfied at the edge, the start point of Auto-Precharge operation will be delayed until t_{RTP}(min) is satisfied.

In case the internal precharge is pushed out by t_{RTP}, t_{RP} starts at the point where the internal precharge happens (not at the next rising clock edge after this event). So for BL = 4 the minimum time from Read with Auto-Precharge to the next Activate command becomes AL + t_{RTP} + t_{RP}. For BL = 8 the time from Read with Auto-Precharge to the next Activate command is AL + 2 + t_{RTP} + t_{RP}. Note that both parameters t_{RTP} and t_{RP} have to be rounded up to the next integer value. In any event internal precharge does not start earlier than two clocks after the last 4-bit prefetch.

A new bank active (command) may be issued to the same bank if the following two conditions are satisfied simultaneously:

(1) The $\overline{RAS}$ precharge time (t_{RP}) has been satisfied from the clock at which the Auto-Precharge begins.

(2) The $\overline{RAS}$ cycle time (t_{RC}) from the previous bank activation has been satisfied.



AC & DC Operating Conditions

DC Operating Conditions

Recommended DC Operating Conditions

Symbol	Parameter	Rating			Units	Notes
		Min.	Typ.	Max.		
VDD	Supply Voltage	1.7	1.8	1.9	V	1
VDDDL	Supply Voltage for DLL	1.7	1.8	1.9	V	1
VDDQ	Supply Voltage for Output	1.7	1.8	1.9	V	1
VREF	Input Reference Voltage	0.49 * V_{DDQ}	0.5 * V_{DDQ}	0.51 * V_{DDQ}	V	2, 3
VTT	Termination Voltage	VREF - 0.04	VREF	VREF + 0.04	V	4

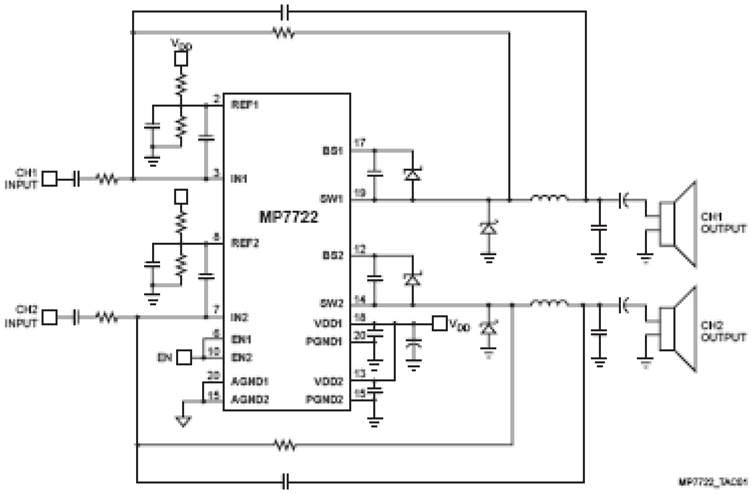
1. V_{DDQ} tracks with V_{DD}, V_{DDDL} tracks with V_{DD}. AC parameters are measured with V_{DD}, V_{DDQ} and V_{DDDL} tied together.
2. The value of VREF may be selected by the user to provide optimum noise margin in the system. Typically the value of V_{REF} is expected to be about 0.5 x V_{DDQ} of the transmitting device and V_{REF} is expected to track variations in V_{DDQ}.
3. Peak to peak ac noise on V_{REF} may not exceed +/- 2% V_{REF} (dc).
4. V_{TT} is not applied directly to the device. V_{TT} is a system supply for signal termination resistors, is expected to be set equal to V_{REF} and must track variations in die dc level of V_{REF}.

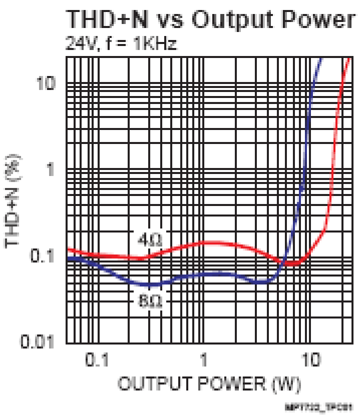
Audio board

MP7720/7722 Application

In VW47L TV the MP7722 is a stereo 10W Class D Audio Amplifier. It has each output power of 10 W at 24V supply into a 6 ohm load.

TYPICAL APPLICATION for MP7722



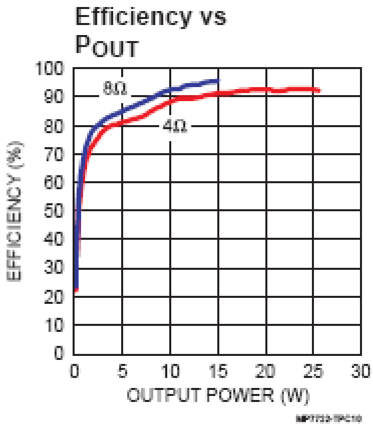


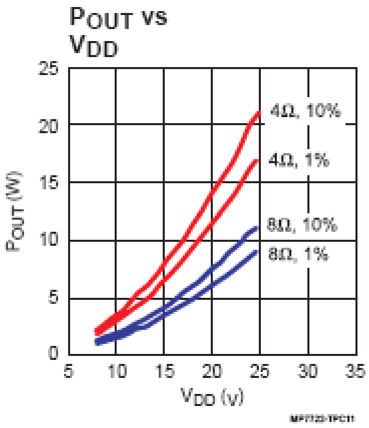
1. DESCRIPTION

The MP7722 utilizes a single ended output structure capable of delivering 2 x 20W into 4Ω speakers. MPS Class D Audio Amplifiers exhibit the high fidelity of a Class A/B amplifier at efficiencies greater than 90%. The circuit is based on the MPS' proprietary variable frequency topology that delivers low distortion, fast response time and operates on a single power supply.

2. Output power measurement

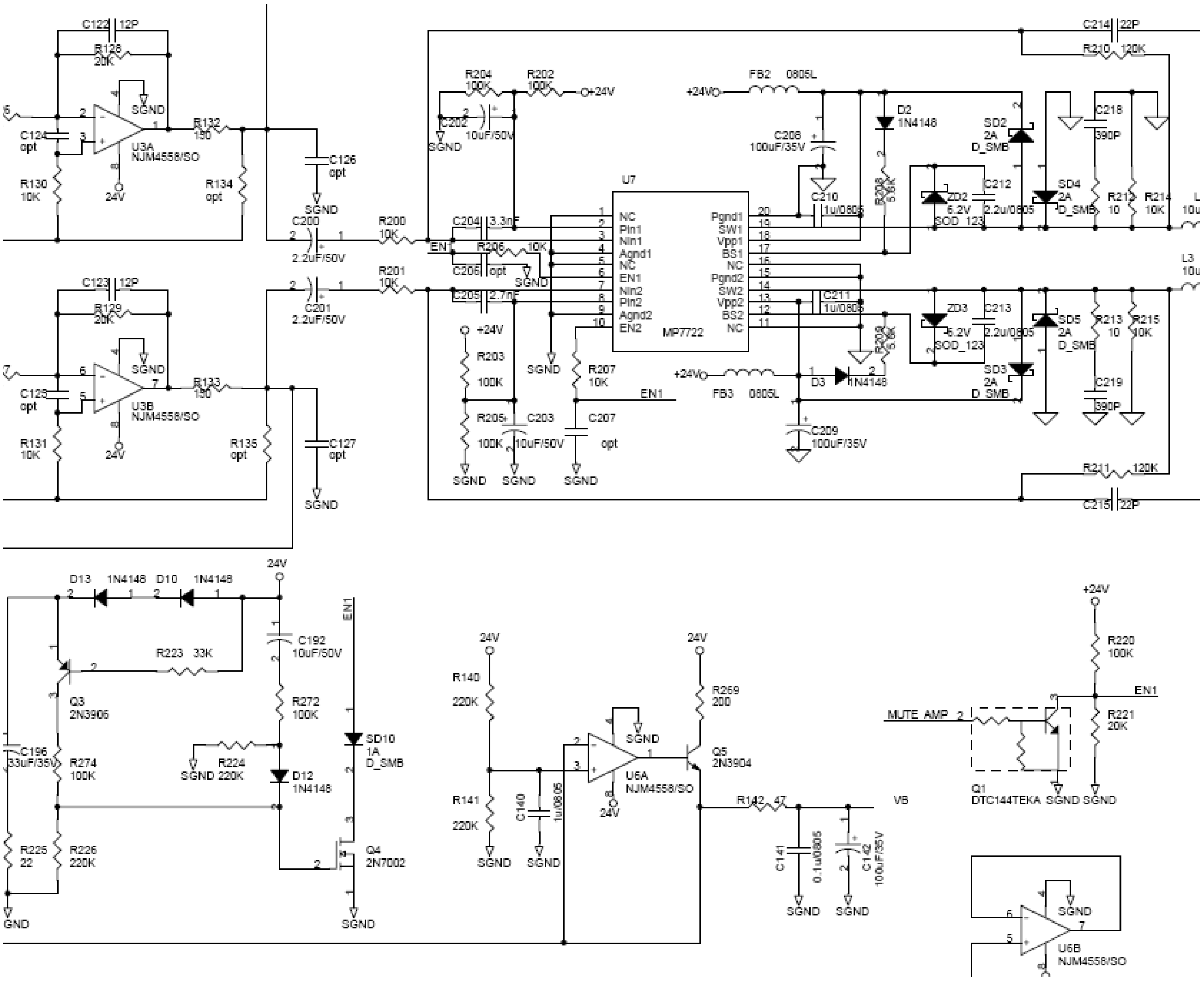
The output power as a function of the supply voltage is measured on the output pins at THD = 10%,in the JV50P TV Vcc=24V so we can see as shown in the following figure output.





3. Mute/Enable Function

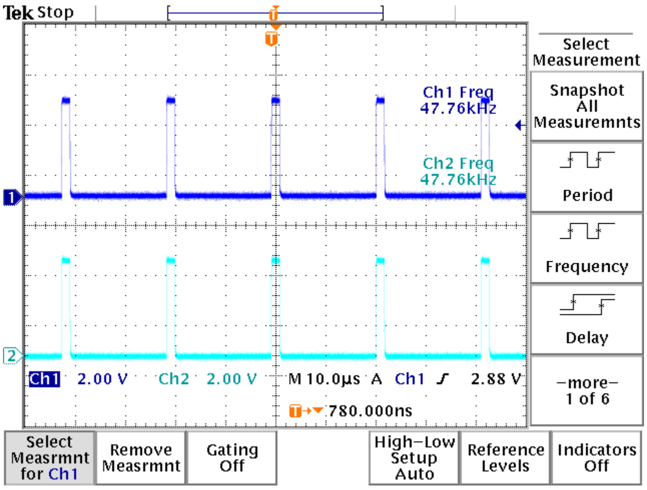
The MP7722 EN inputs are active high enable controls. To enable the MP7722, drive EN with a 2.0V or greater voltage. To disable the Amplifier, drive it below 0.4V. While the MP7722 is disabled, the VDD operating current is less than 10µA and the output driver MOSFETs are turned off. The MP7722 requires approximately 500ms from the time that EN is asserted (driven high) to when the amplifier begins normal operation.

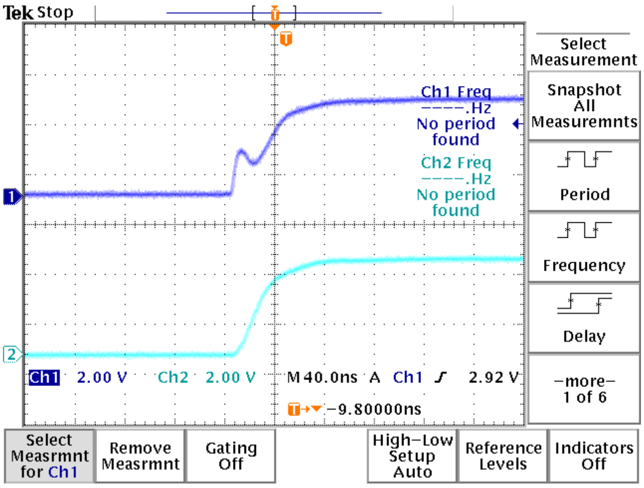

C122 12P
R128 20K
SGND
C124 opt
R130 10K
24V
U3A NJM4558/SO
R132 150
R134 opt
C126 opt
C200 2.2uF/50V
R200 10K
C123 12P
R129 20K
C128 opt
R131 10K
U3B NJM4558/SO
R133 150
R135 opt
C127 opt
C201 2.2uF/50V
R201 10K
R204 100K
R202 100K
+24V
C202 10uF/50V
C204 3.3nF
EN1
R206 10K
C206 opt
C205 2.7nF
R203 100K
R205 100K
C203 10uF/50V
R207 10K
C207 opt
U7
NC
PIn1
NIn1
Agnd1
NC
EN1
NIn2
PIn2
Agnd2
EN2
Pgnd1
SW1
Vpp1
BS1
NC
Pgnd2
SW2
Vpp2
BS2
NC
MP7722
FB2 0805L
C208 100uF/35V
C210 1u/0805
D2 1N4148
R208 5.6K
ZD2 6.2V SOD_123
C212 2.2u/0805
SD2 2A D_SMB
SD4 2A D_SMB
C218 390P
R212 10
R214 10K
C211 1u/0805
R209 5.6K
ZD3 6.2V SOD_123
C213 2.2u/0805
SD5 2A D_SMB
SD3 2A D_SMB
R213 10
R215 10K
C219 390P
FB3 0805L
D3 1N4148
C209 100uF/35V
C214 22P
R210 120K
R211 120K
C215 22P
L3 10u
D13 1N4148
D10 1N4148
C192 10uF/50V
R223 33K
Q3 2N3906
C196 33uF/35V
R274 100K
R272 100K
R224 220K
D12 1N4148
R225 22
R226 220K
GND
SD10 1A D_SMB
Q4 2N7002
R140 220K
R141 220K
C140 1u/0805
U6A NJM4558/SO
R269 200
Q5 2N3904
R142 47
C141 0.1u/0805
C142 100uF/35V
VB
MUTE_AMP
Q1 DTC144TEKA
R220 100K
R221 20K
U6B NJM4558/SO

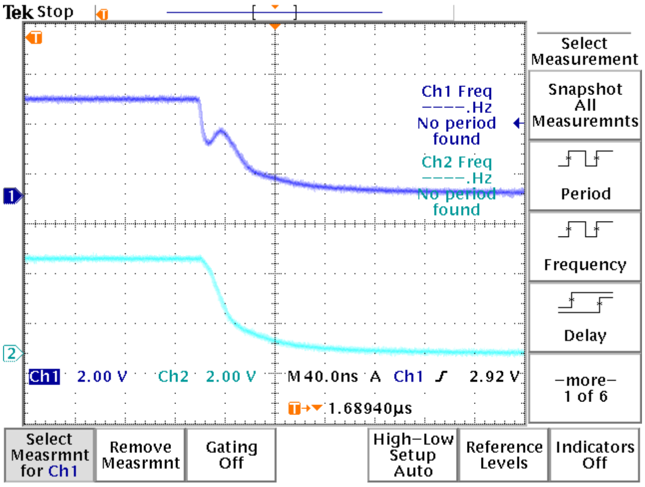
Chapter8 Waveforms

RGB MODE(Chroma 2229 1366X768 60HZ，＃41)

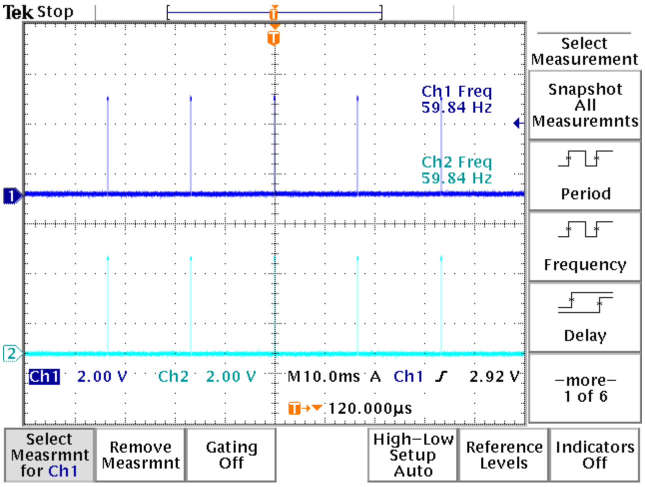
CH1 H-sync (R214)；CH2 H-sync (C143)

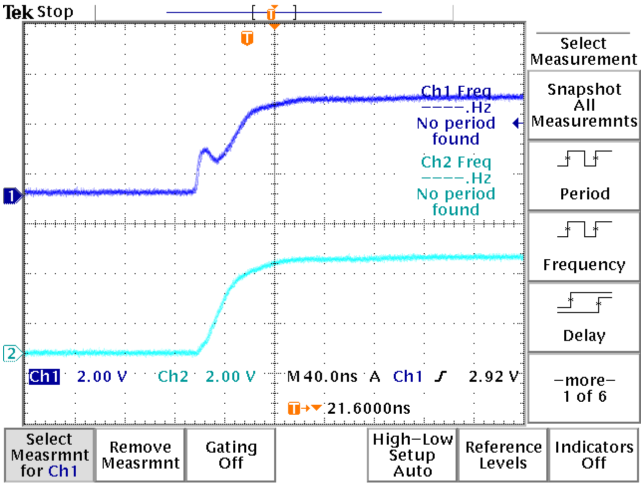

Ch1 Freq 47.76kHz
Ch2 Freq 47.76kHz
Ch1 2.00 V Ch2 2.00 V M 10.0µs A Ch1 ∫ 2.88 V
780.000ns

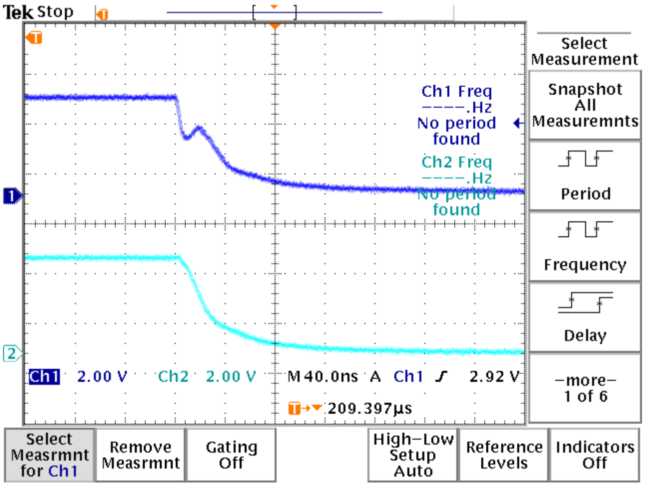

Ch1 Freq ----.Hz No period found
Ch2 Freq ----.Hz No period found
Ch1 2.00 V Ch2 2.00 V M 40.0ns A Ch1 ∫ 2.92 V
−9.80000ns



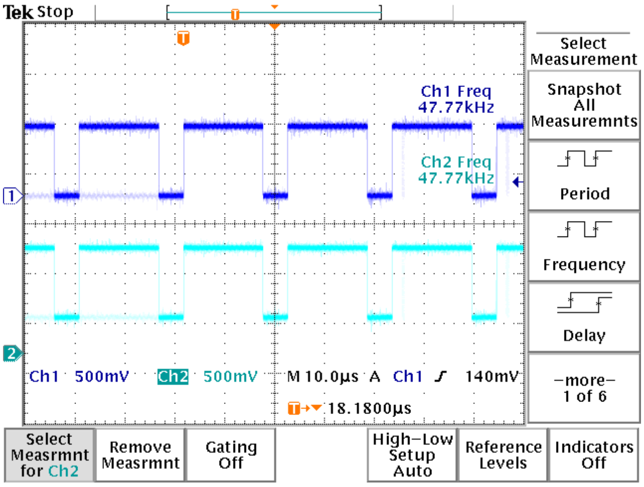
CH1 V-sync (R215)；CH2 V-sync (C144)

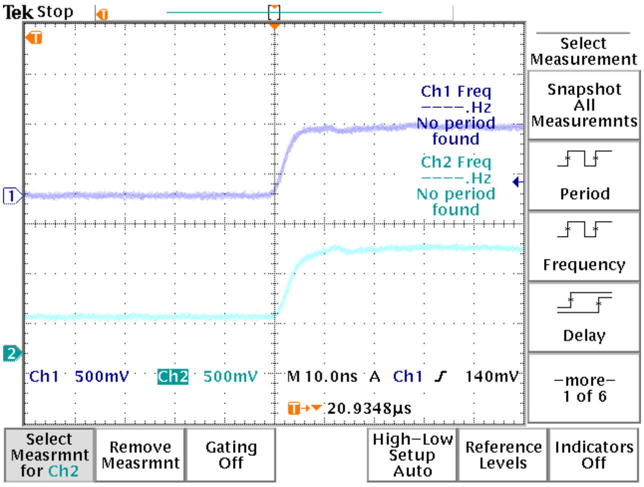


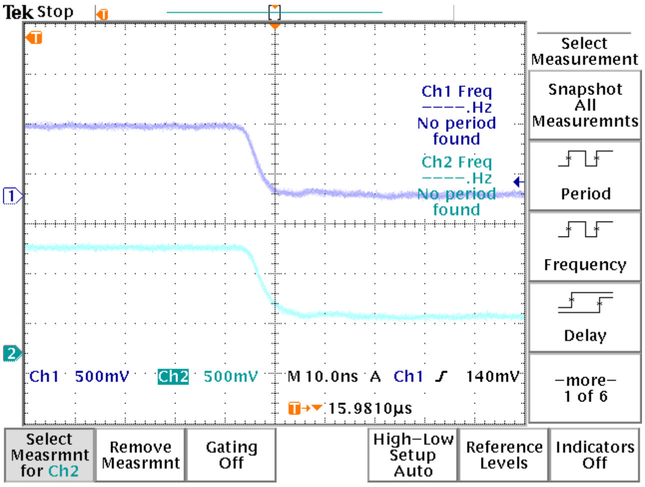




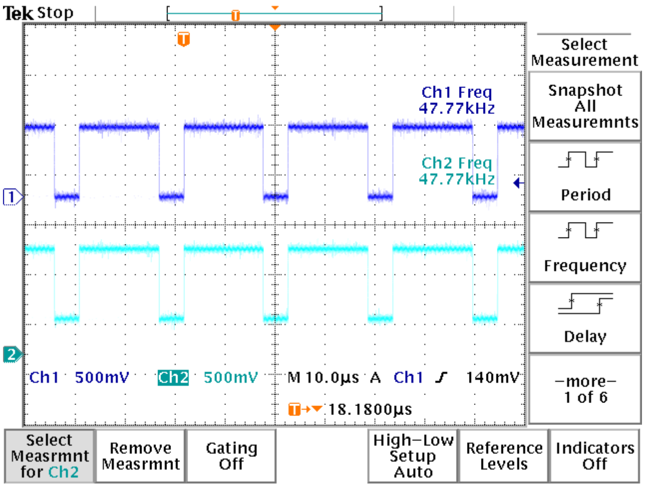
CH1 R (R207) ; CH2 R (C133)

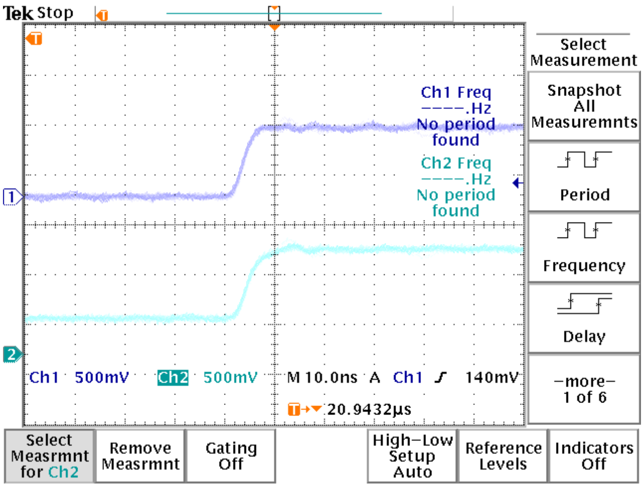


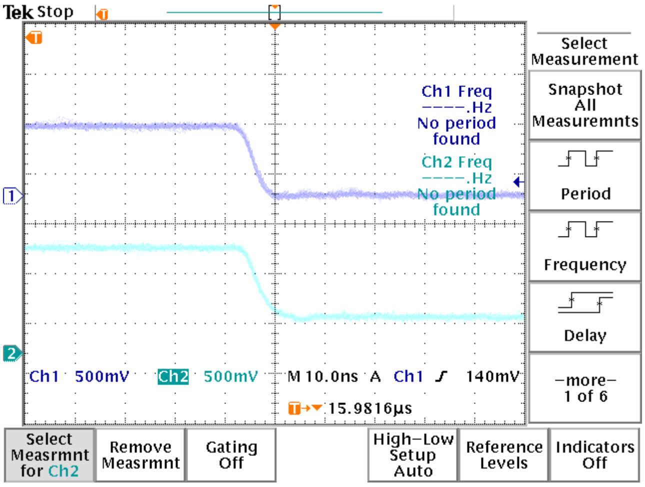




CH1 G (R197)；CH2 G (C133)







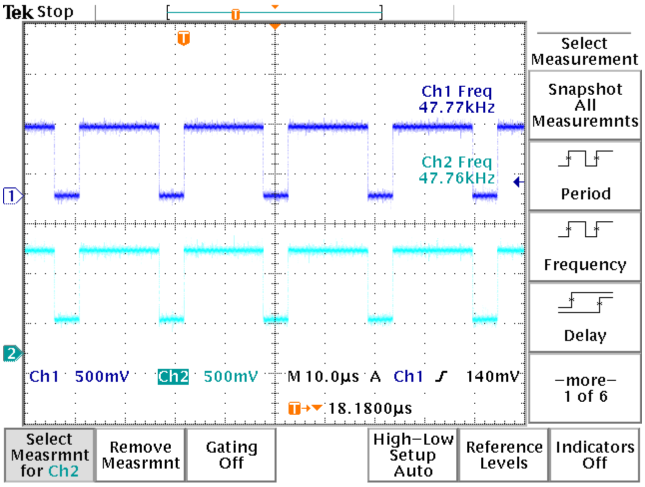
Ch1 Freq ––––.Hz No period found

Ch2 Freq ––––.Hz No period found

Ch1 500mV Ch2 500mV M 10.0ns A Ch1 ∫ 140mV

T→▼ 15.9816µs

CH1 B (R201) ; CH2 B (C136)

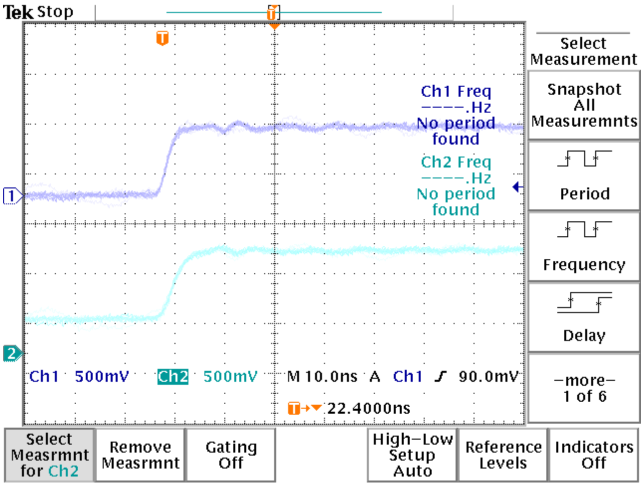


Ch1 Freq 47.77kHz

Ch2 Freq 47.76kHz

Ch1 500mV Ch2 500mV M 10.0µs A Ch1 ∫ 140mV

T→▼ 18.1800µs

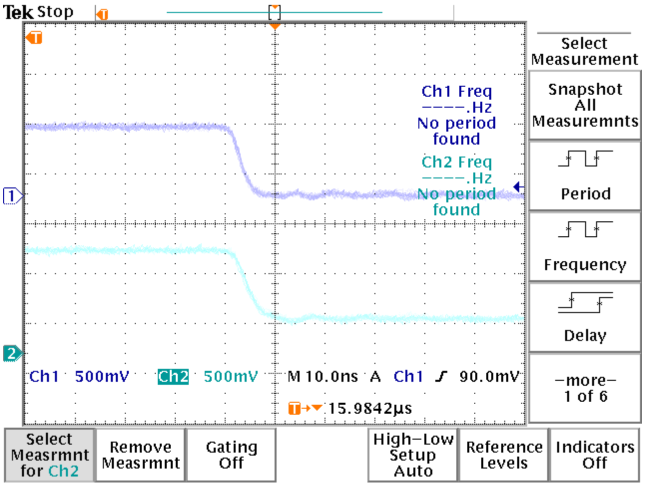


Ch1 Freq ––––.Hz No period found

Ch2 Freq ––––.Hz No period found

Ch1 500mV Ch2 500mV M 10.0ns A Ch1 ∫ 90.0mV

T→▼ 22.4000ns

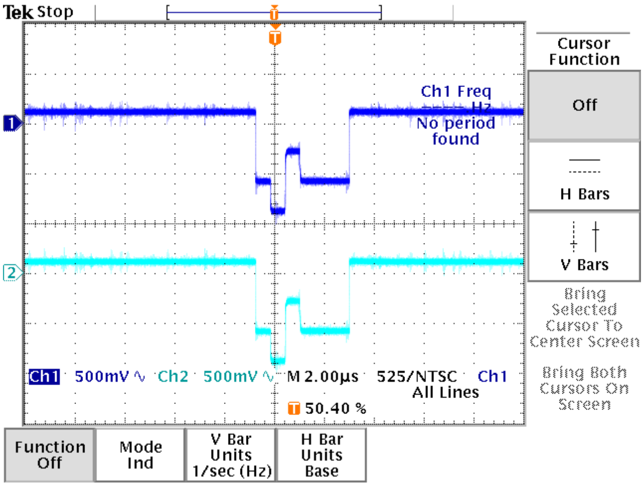

Ch1 Freq ----.Hz No period found

Ch2 Freq ----.Hz No period found

Ch1 500mV Ch2 500mV M 10.0ns A Ch1 ƒ 90.0mV

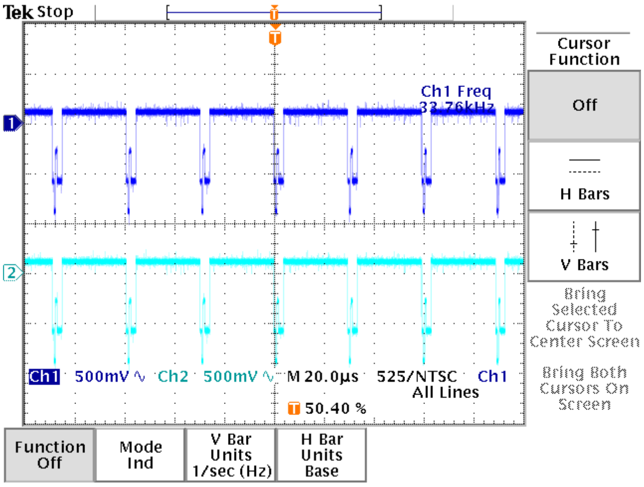
T→▼15.9842µs

COMPONENT MODE(Chroma 2229 HDTV-1080i 60HZ，＃41)
CH1 Y1_IN（R181）：CH2 Y1P（C120）


Ch1 Freq ----.Hz No period found

Ch1 500mV ∿ Ch2 500mV ∿ M 2.00µs 525/NTSC Ch1 All Lines

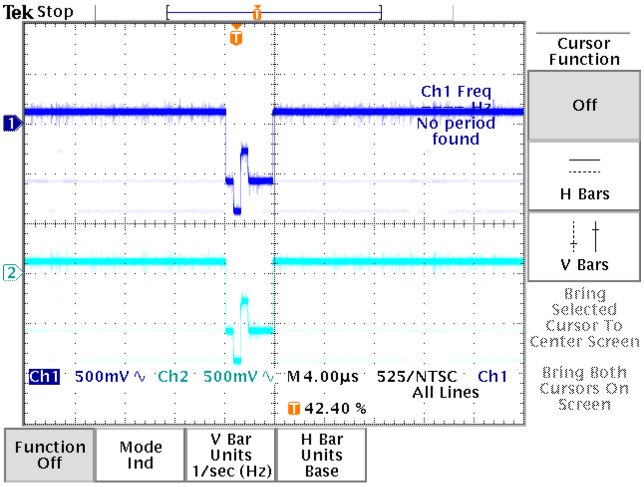
T 50.40 %

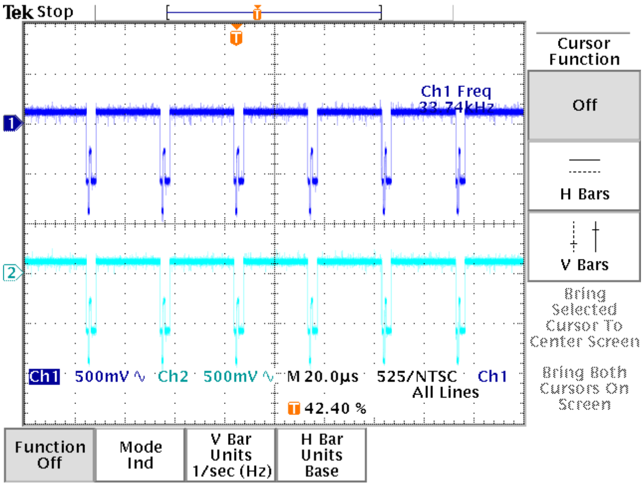

Ch1 Freq 33.76kHz

Ch1 500mV ∿ Ch2 500mV ∿ M 20.0µs 525/NTSC Ch1 All Lines

T 50.40 %

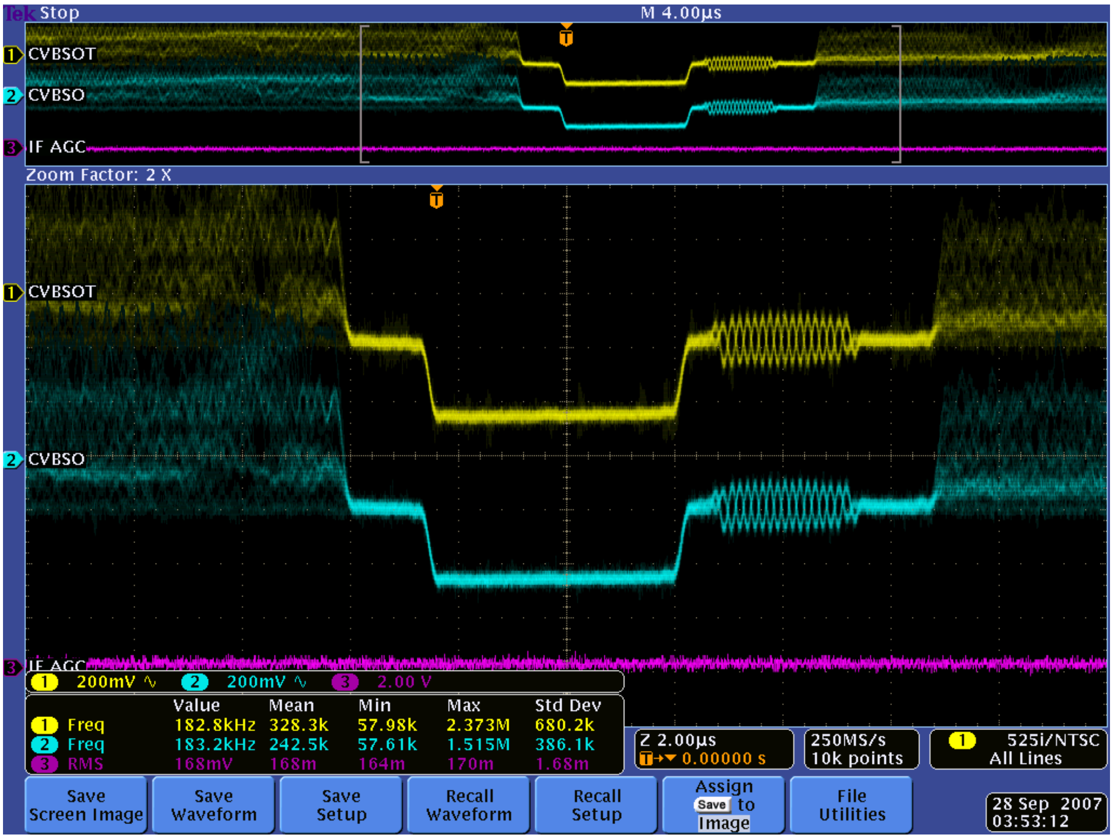
CH1 Y2_IN（R168）: CH2 Y2P（C105）





TV MODE(CH52 中天新聞台)

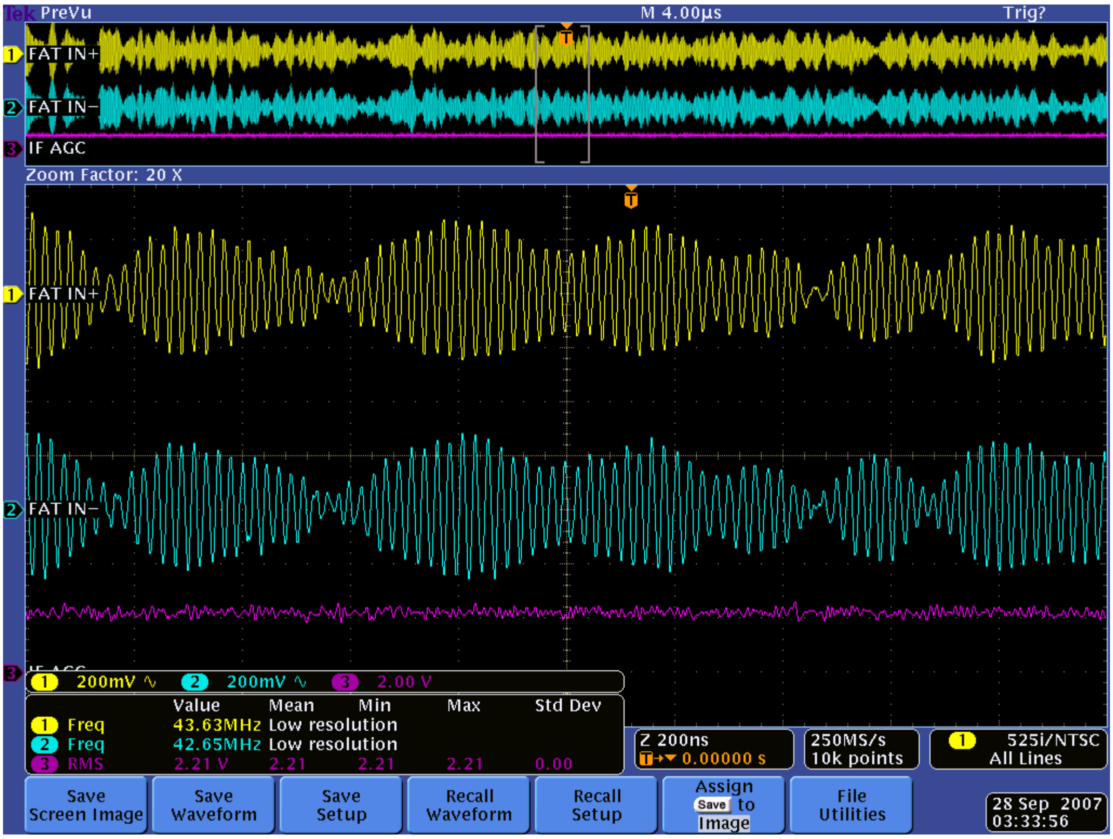
CH1 CVBSOT（R132）：CH2 CVBSO（C80）：CH3 IF AGC



	Value	Mean	Min	Max	Std Dev
1 Freq	182.8kHz	328.3k	57.98k	2.373M	680.2k
2 Freq	183.2kHz	242.5k	57.61k	1.515M	386.1k
3 RMS	168mV	168m	164m	170m	1.68m

DTV MODE(RF2-2)

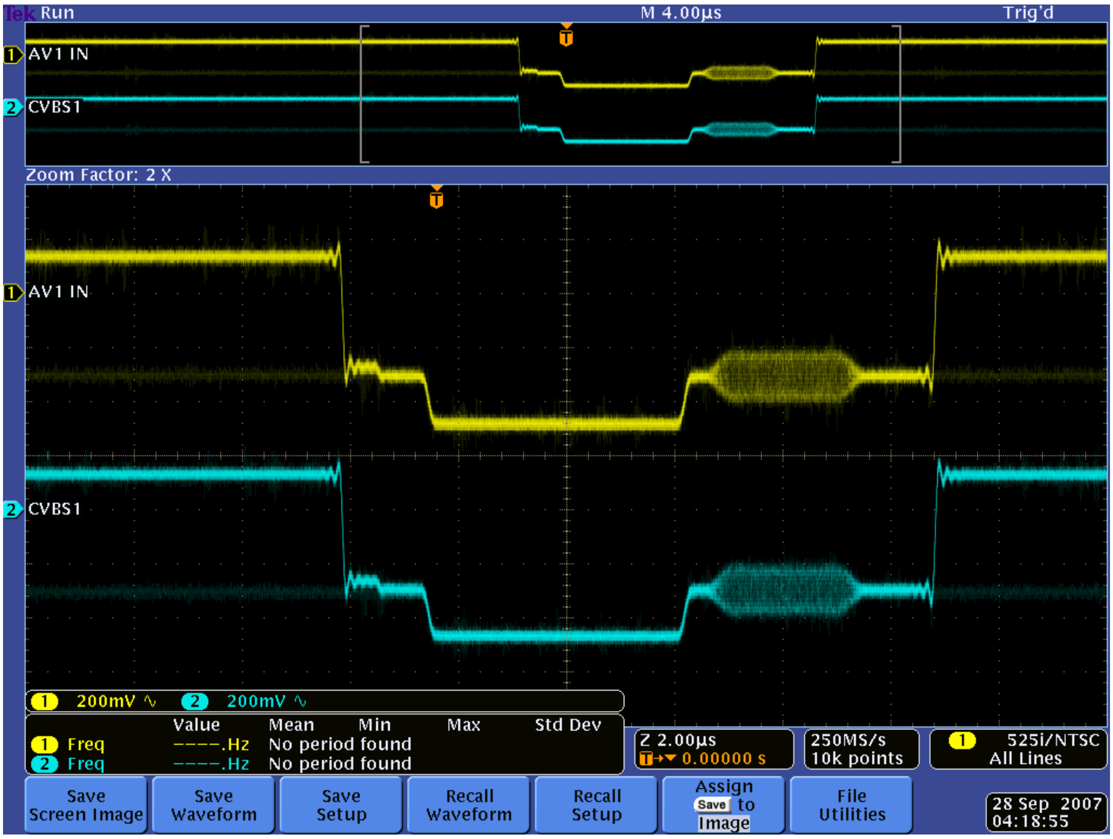
CH1 FAT IN+ : CH2 FAT IN- : CH3 IF AGC



	Value	Mean	Min	Max	Std Dev
1 Freq	43.63MHz	Low resolution			
2 Freq	42.65MHz	Low resolution			
3 RMS	2.21 V	2.21	2.21	2.21	0.00

AV MODE(RCA，NTSC-443，＃41)

CH1 AV1 IN：CH2 CVBS1



Tek Run M 4.00µs Trig'd

Zoom Factor: 2 X

1 200mV 2 200mV

	Value	Mean	Min	Max	Std Dev
1 Freq	----.Hz	No period found			
2 Freq	----.Hz	No period found			

Z 2.00µs
0.00000 s

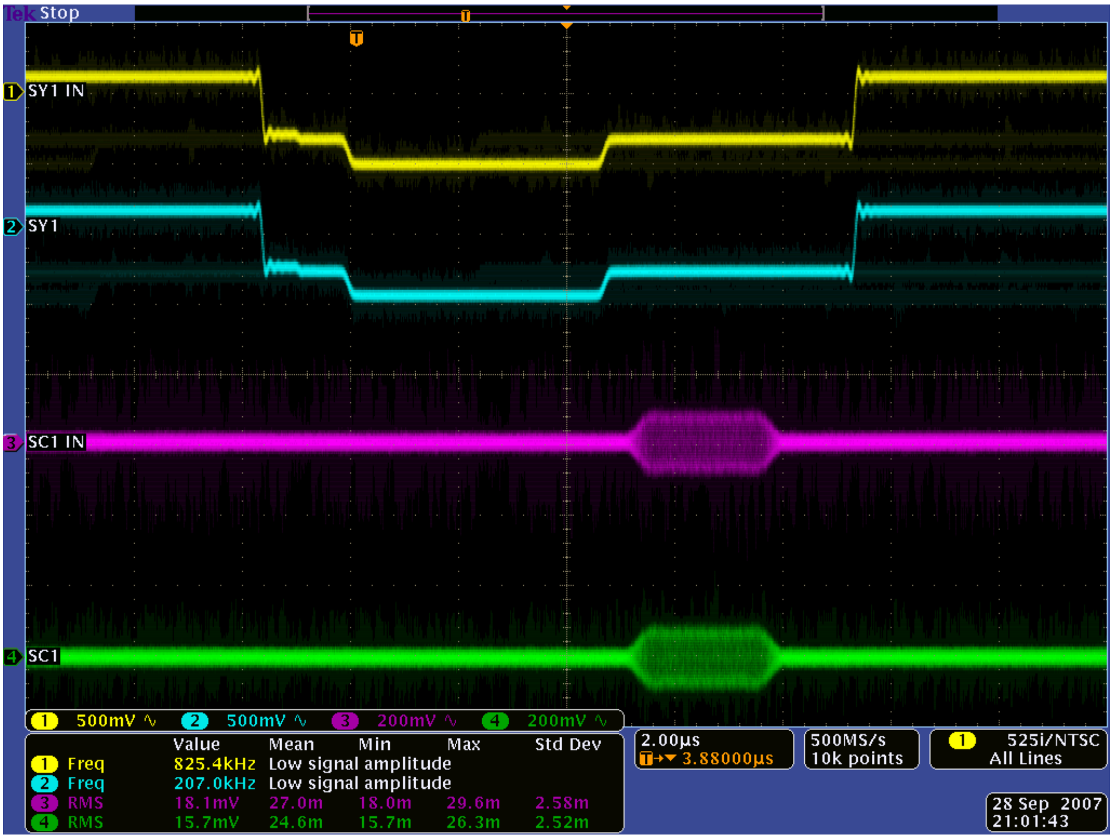
250MS/s
10k points

1 525i/NTSC
All Lines

28 Sep 2007
04:18:55

AV MODE(S VIDEO，NTSC-443，＃41)

CH1 SY1 IN：CH2 SY1：CH3 SC1 IN：CH4 SC1

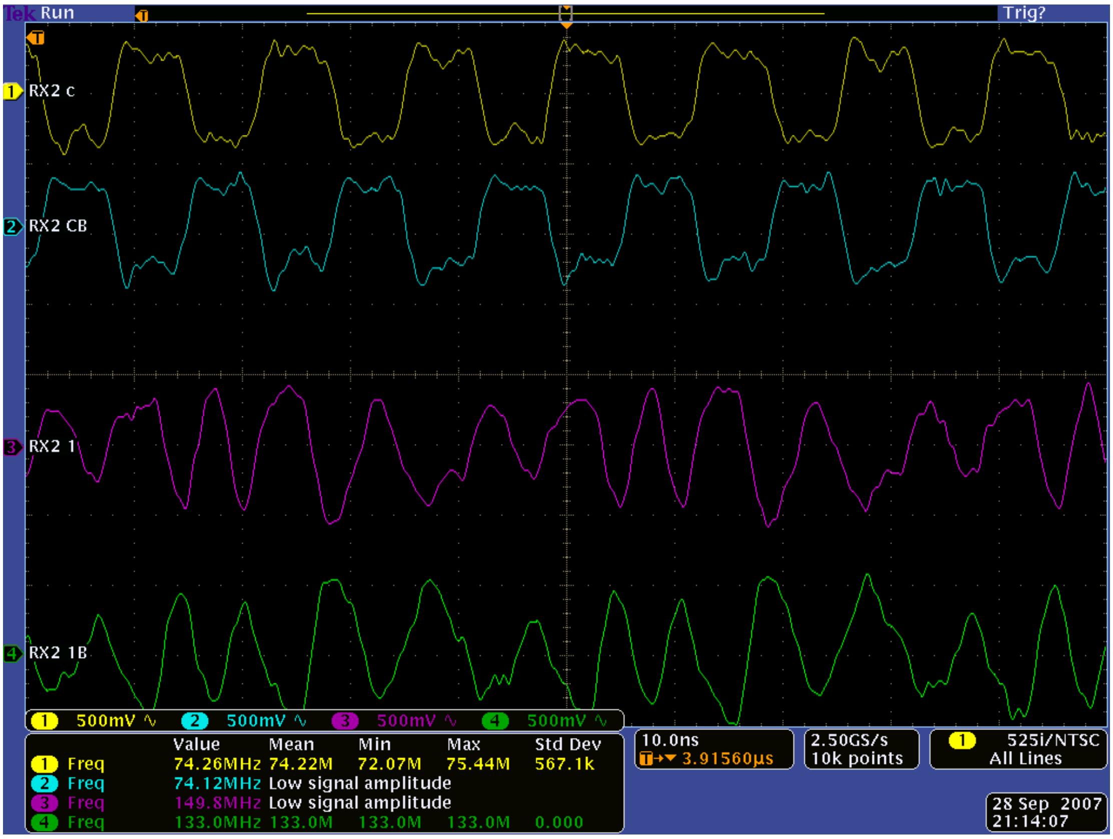


	Value	Mean	Min	Max	Std Dev
1 Freq	825.4kHz	Low signal amplitude			
2 Freq	207.0kHz	Low signal amplitude			
3 RMS	18.1mV	27.0m	18.0m	29.6m	2.58m
4 RMS	15.7mV	24.6m	15.7m	26.3m	2.52m

HDMI MODE(Chroma 2229 HDMI-1080i 60HZ，＃41)

HDMI 1

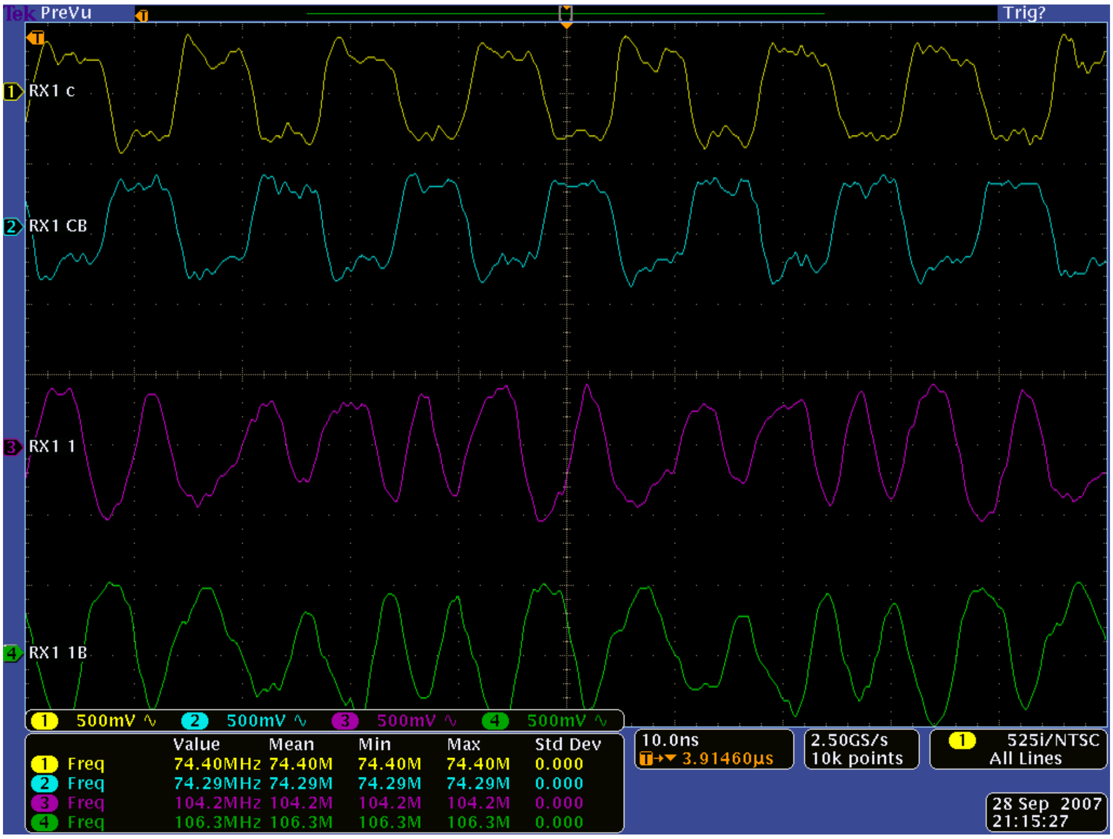
CH1 RX2 C：CH2 RX2 CB：CH3 RX2 1：CH4 RX2 1B



	Value	Mean	Min	Max	Std Dev
1 Freq	74.26MHz	74.22M	72.07M	75.44M	567.1k
2 Freq	74.12MHz	Low signal amplitude			
3 Freq	149.8MHz	Low signal amplitude			
4 Freq	133.0MHz	133.0M	133.0M	133.0M	0.000

HDMI 2

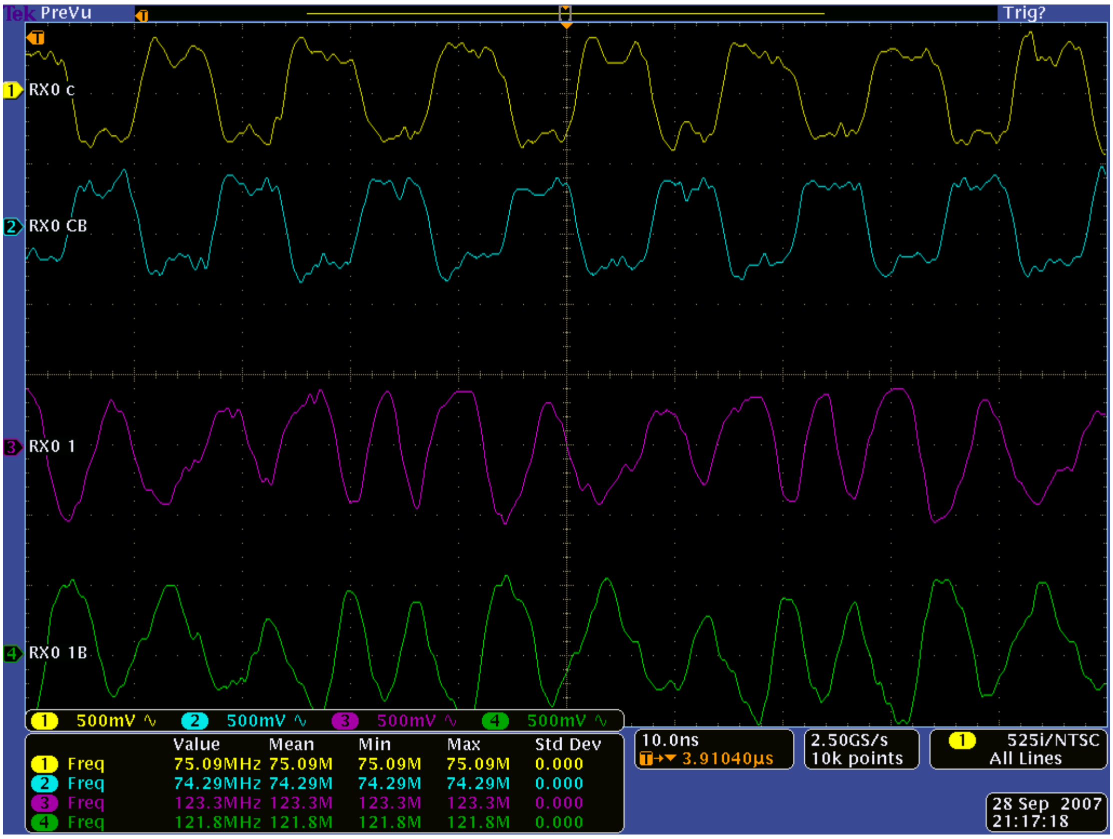
CH1 RX1 C：CH2 RX1 CB：CH3 RX1 1：CH4 RX1 1B



	Value	Mean	Min	Max	Std Dev
1 Freq	74.40MHz	74.40M	74.40M	74.40M	0.000
2 Freq	74.29MHz	74.29M	74.29M	74.29M	0.000
3 Freq	104.2MHz	104.2M	104.2M	104.2M	0.000
4 Freq	106.3MHz	106.3M	106.3M	106.3M	0.000

HDMI 3

CH1 RX0 C：CH2 RX0 CB：CH3 RX0 1：CH4 RX0 1B



	Value	Mean	Min	Max	Std Dev
1 Freq	75.09MHz	75.09M	75.09M	75.09M	0.000
2 Freq	74.29MHz	74.29M	74.29M	74.29M	0.000
3 Freq	123.3MHz	123.3M	123.3M	123.3M	0.000
4 Freq	121.8MHz	121.8M	121.8M	121.8M	0.000

10.0ns
3.91040µs

2.50GS/s
10k points

1 525i/NTSC
All Lines

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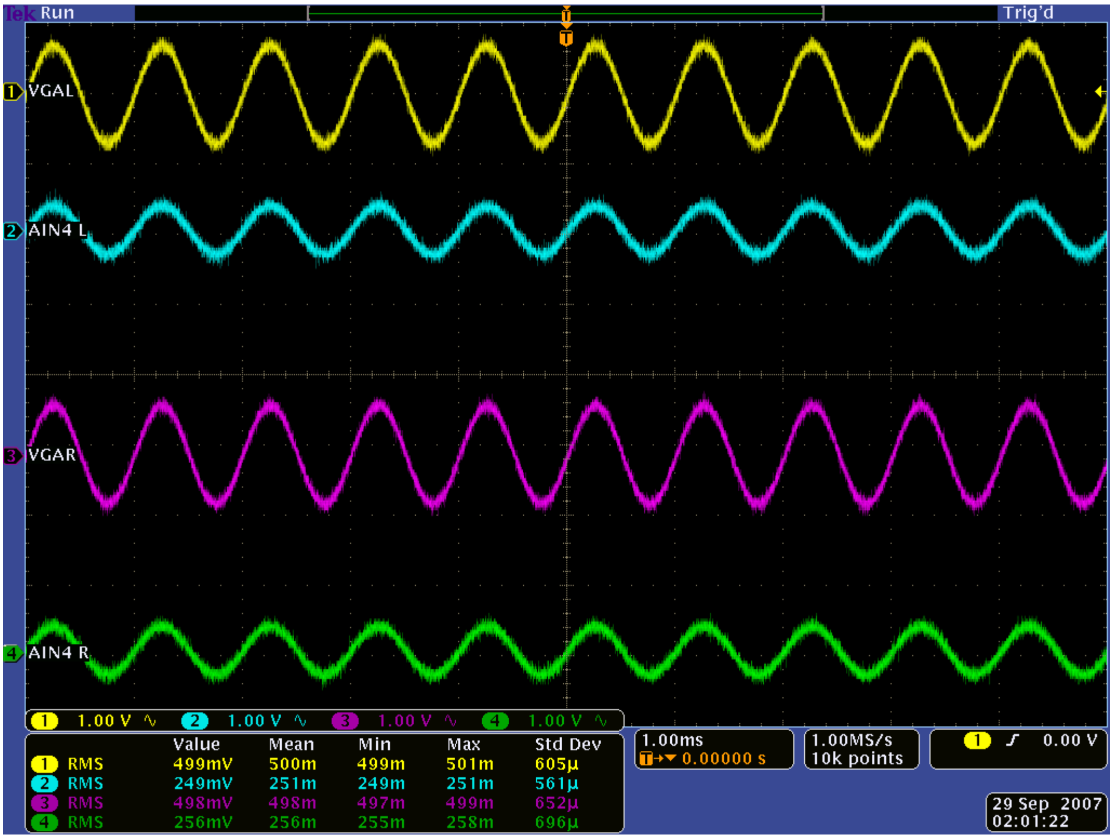
21:17:18

Audio BD of VGA ➔ Input Level: 500mV

Frequency: 1KHz

CH1 VGAL：CH2 AIN4 L：CH3 VGAR：CH4 AIN4 R

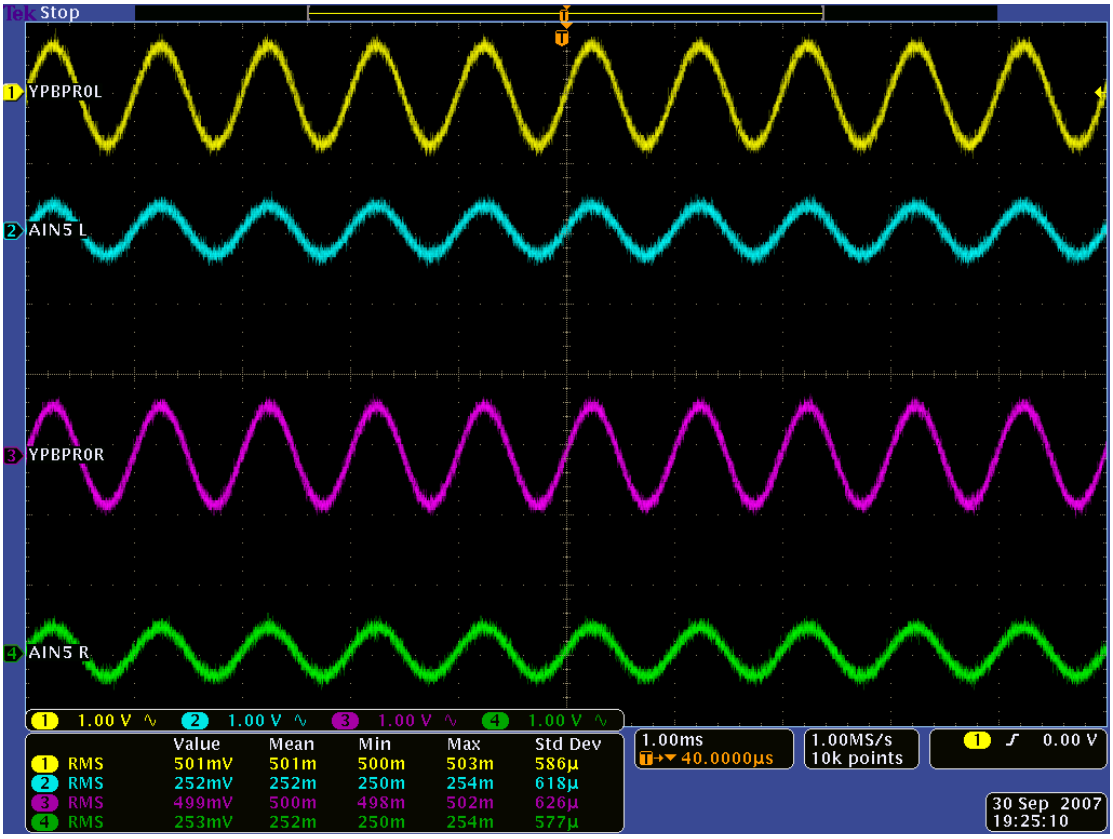


	Value	Mean	Min	Max	Std Dev
1 RMS	499mV	500m	499m	501m	605µ
2 RMS	249mV	251m	249m	251m	561µ
3 RMS	498mV	498m	497m	499m	652µ
4 RMS	256mV	256m	255m	258m	696µ

Audio BD of YPbPr 2 ➔ Input Level: 500mV

Frequency: 1KHz

CH1 YPBPR0L ：CH2 AIN5 L：CH3 YPBPR0R：CH4 AIN5 R

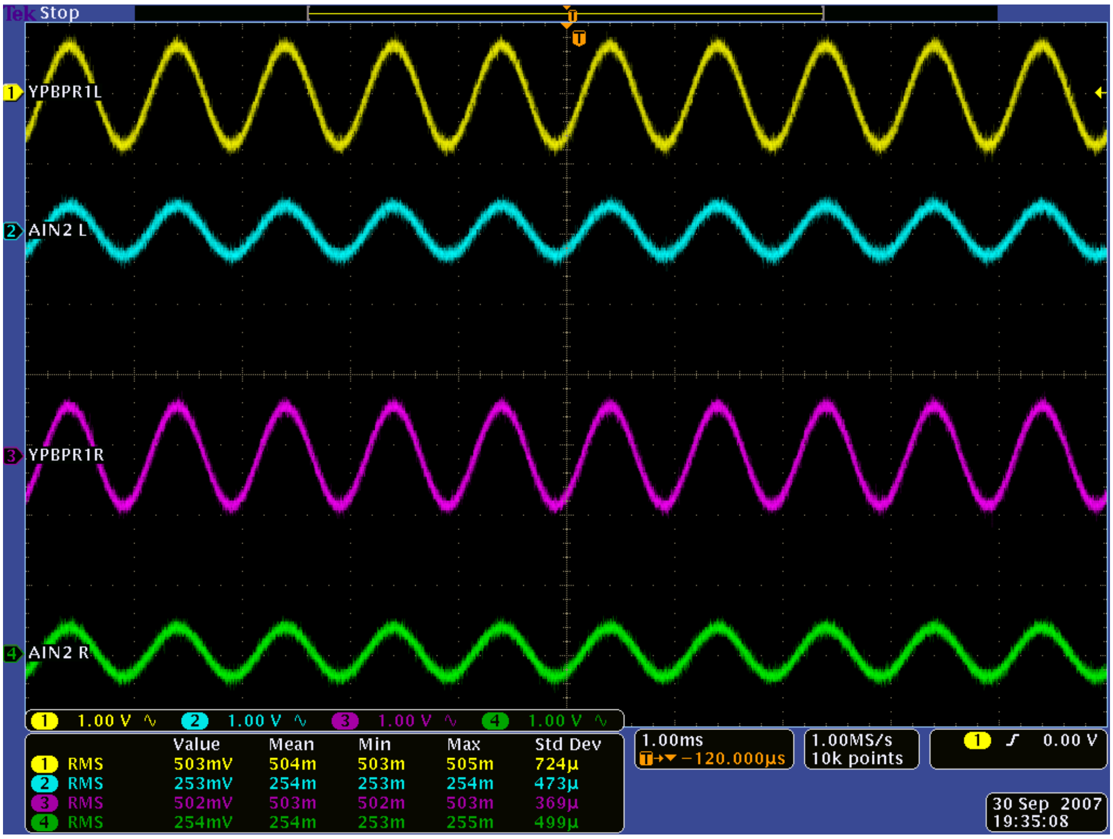


	Value	Mean	Min	Max	Std Dev
1 RMS	501mV	501m	500m	503m	586µ
2 RMS	252mV	252m	250m	254m	618µ
3 RMS	499mV	500m	498m	502m	626µ
4 RMS	253mV	252m	250m	254m	577µ

Audio BD of YPbPr 1 ➔ Input Level: 500mV

Frequency: 1KHz

CH1 YPBPR1L ：CH2 AIN2 L：CH3 YPBPR1R：CH4 AIN2 R



```
      Value   Mean  Min   Max   Std Dev
1 RMS 503mV   504m  503m  505m  724µ
2 RMS 253mV   254m  253m  254m  473µ
3 RMS 502mV   503m  502m  503m  369µ
4 RMS 254mV   254m  253m  255m  499µ
```

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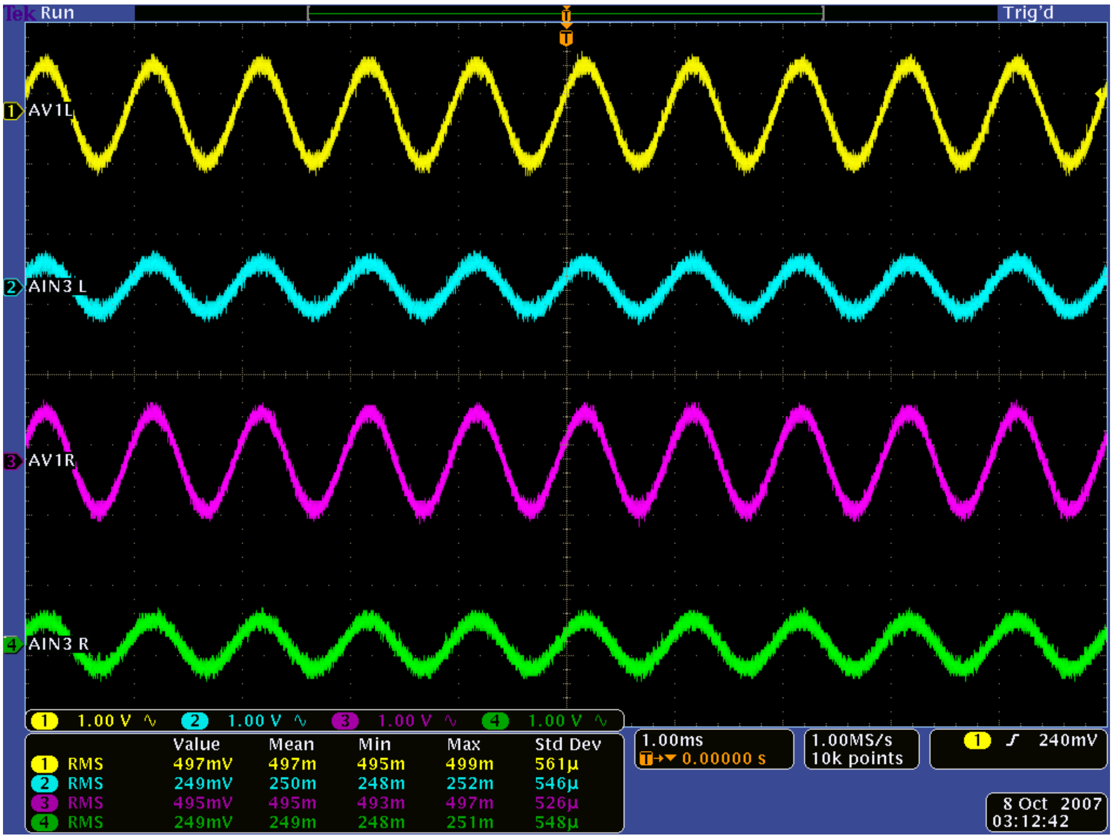
19:35:08

Audio BD of AV ➔ Input Level: 500mV

Frequency: 1KHz

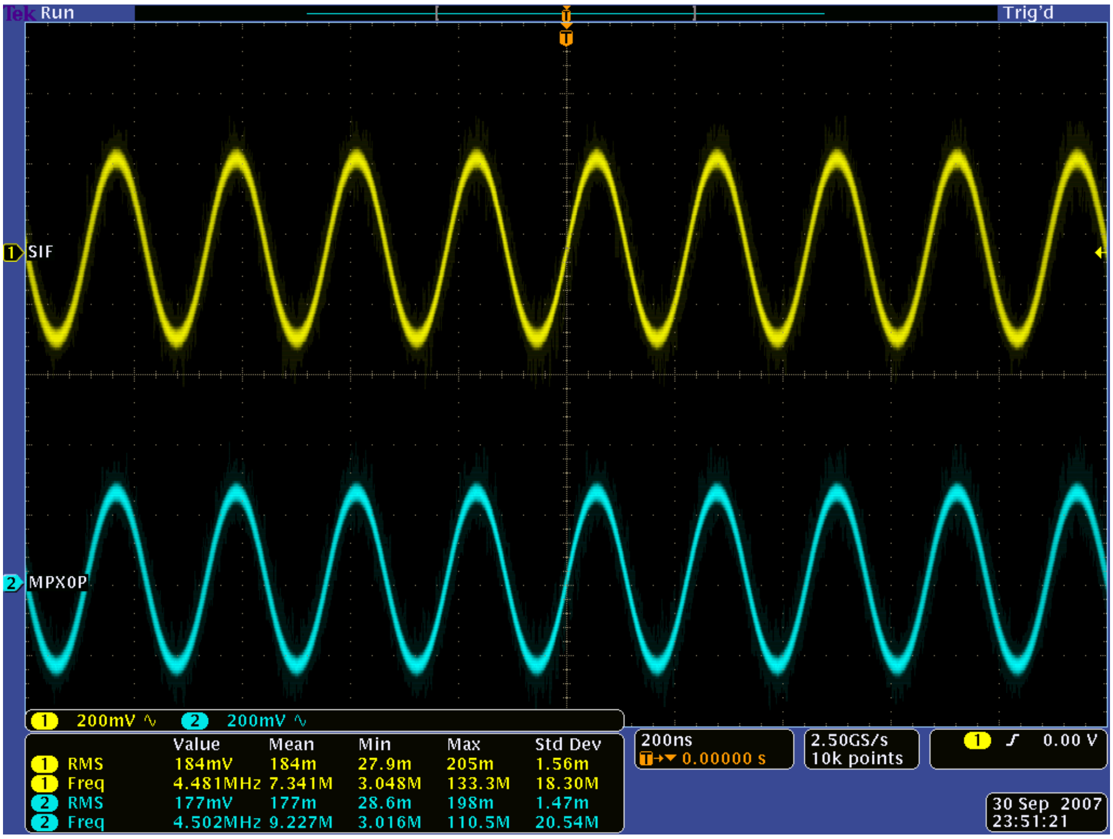
CH1 AV1L：CH2 AIN3 L：CH3 AV1R：CH4 AIN3 R



		Value	Mean	Min	Max	Std Dev
1	RMS	497mV	497m	495m	499m	561µ
2	RMS	249mV	250m	248m	252m	546µ
3	RMS	495mV	495m	493m	497m	526µ
4	RMS	249mV	249m	248m	251m	548µ

Audio BD of TV （ShibaSoku TG19CC）

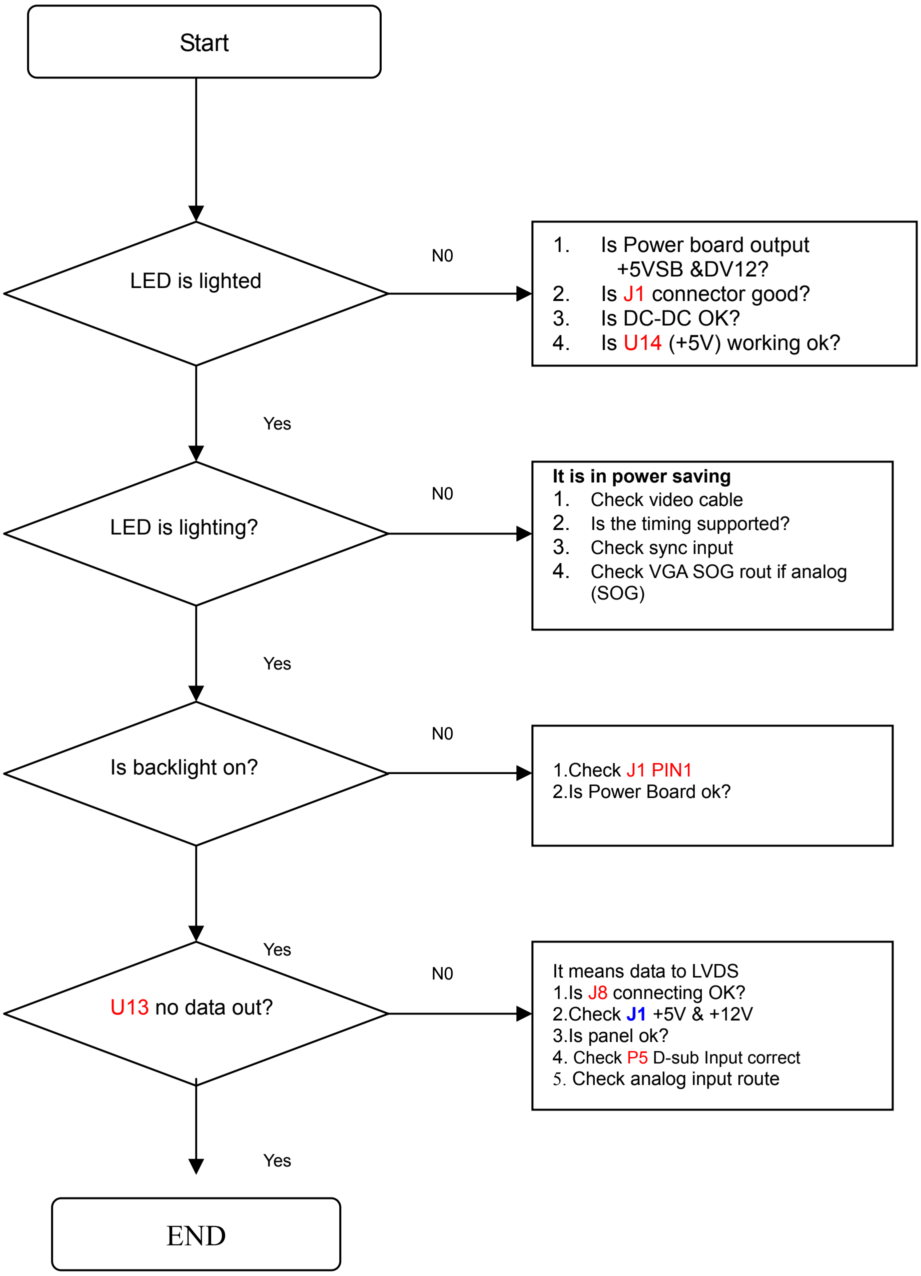
CH1 SIF ：CH2 MPX0P（C12）



	Value	Mean	Min	Max	Std Dev
1 RMS	184mV	184m	27.9m	205m	1.56m
1 Freq	4.481MHz	7.341M	3.048M	133.3M	18.30M
2 RMS	177mV	177m	28.6m	198m	1.47m
2 Freq	4.502MHz	9.227M	3.016M	110.5M	20.54M

Chapter 9 Trouble shooting

MONITOR DISPLAY NOTHING (PC MODE)



1. Is Power board output +5VSB &DV12?
2. Is J1 connector good?
3. Is DC-DC OK?
4. Is U14 (+5V) working ok?

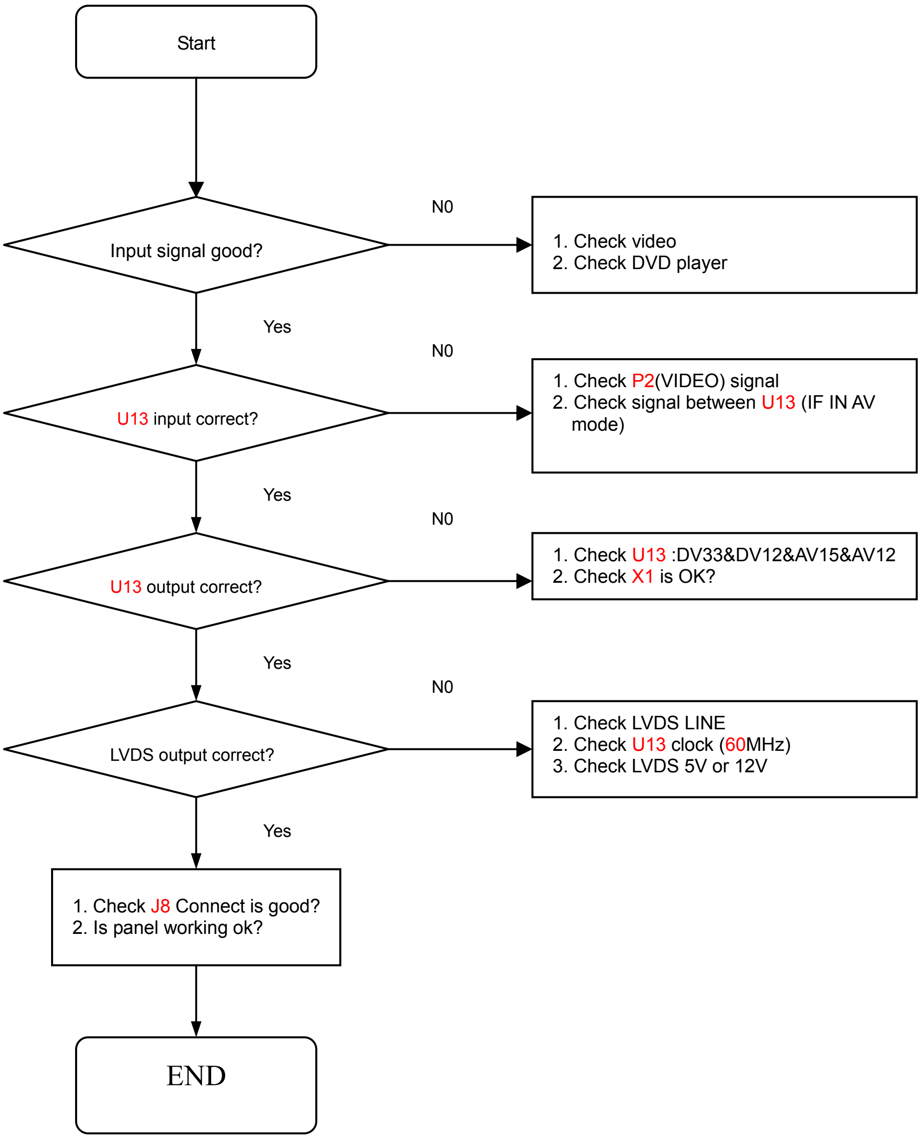
It is in power saving

1. Check video cable
2. Is the timing supported?
3. Check sync input
4. Check VGA SOG rout if analog (SOG)

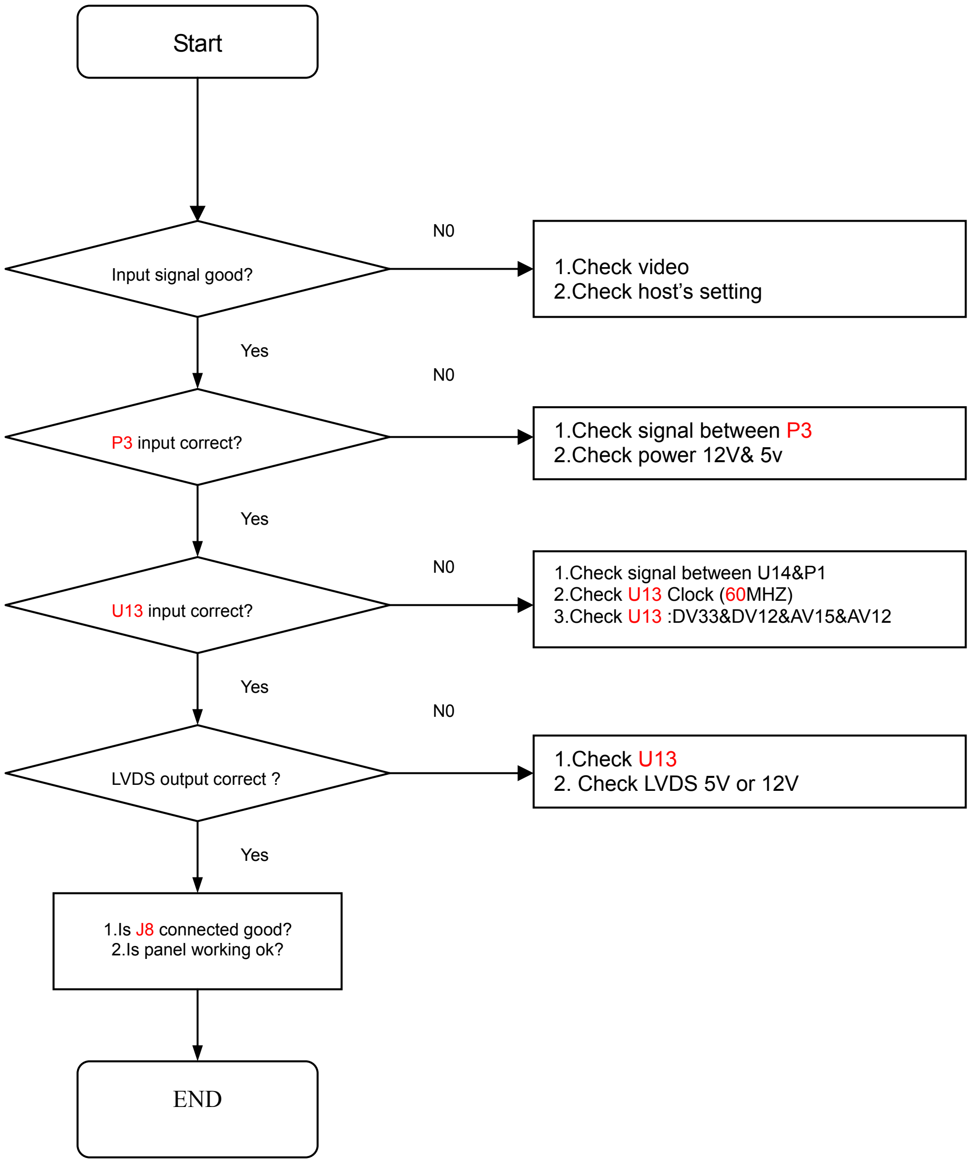
1.Check J1 PIN1
2.Is Power Board ok?

It means data to LVDS
1.Is J8 connecting OK?
2.Check **J1** +5V & +12V
3.Is panel ok?
4. Check P5 D-sub Input correct
5. Check analog input route

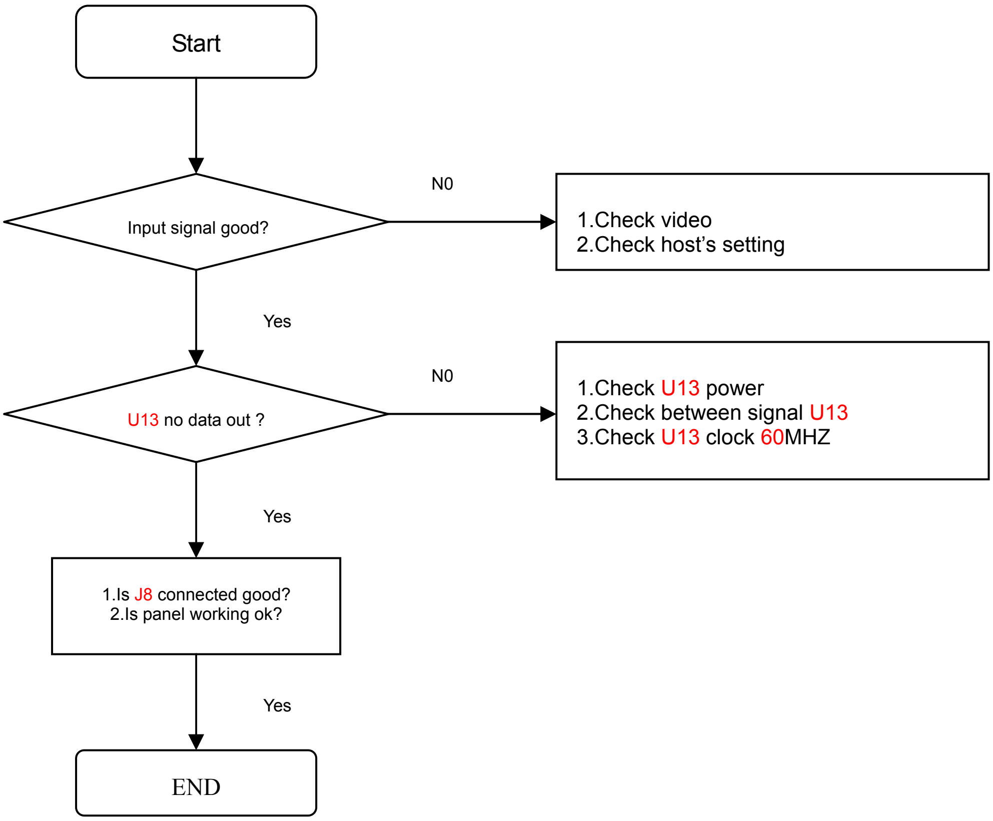
(TV, COMPOSITE VIDEO) IS NOT DISPLAY CORRECTLY



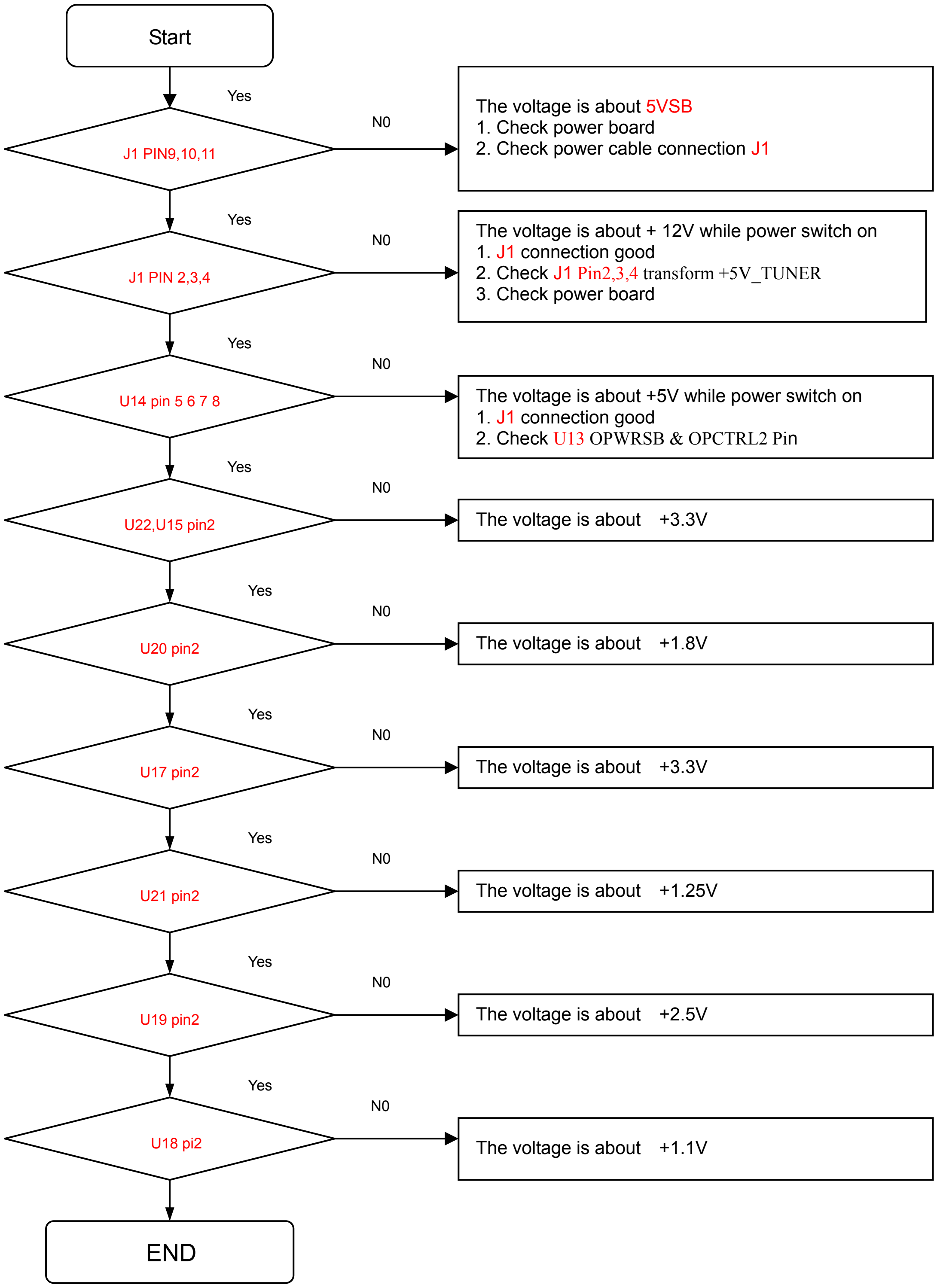
(COMPONENT) IS NOT DISPLAY CORRECTLY



(HDMI) IS NOT DISPLAY CORRECTLY



ROUBLE OF DC-DC CONVERTER



The voltage is about 5VSB
1. Check power board
2. Check power cable connection J1

The voltage is about + 12V while power switch on
1. J1 connection good
2. Check J1 Pin2,3,4 transform +5V_TUNER
3. Check power board

The voltage is about +5V while power switch on
1. J1 connection good
2. Check U13 OPWRSB & OPCTRL2 Pin

The voltage is about +3.3V

The voltage is about +1.8V

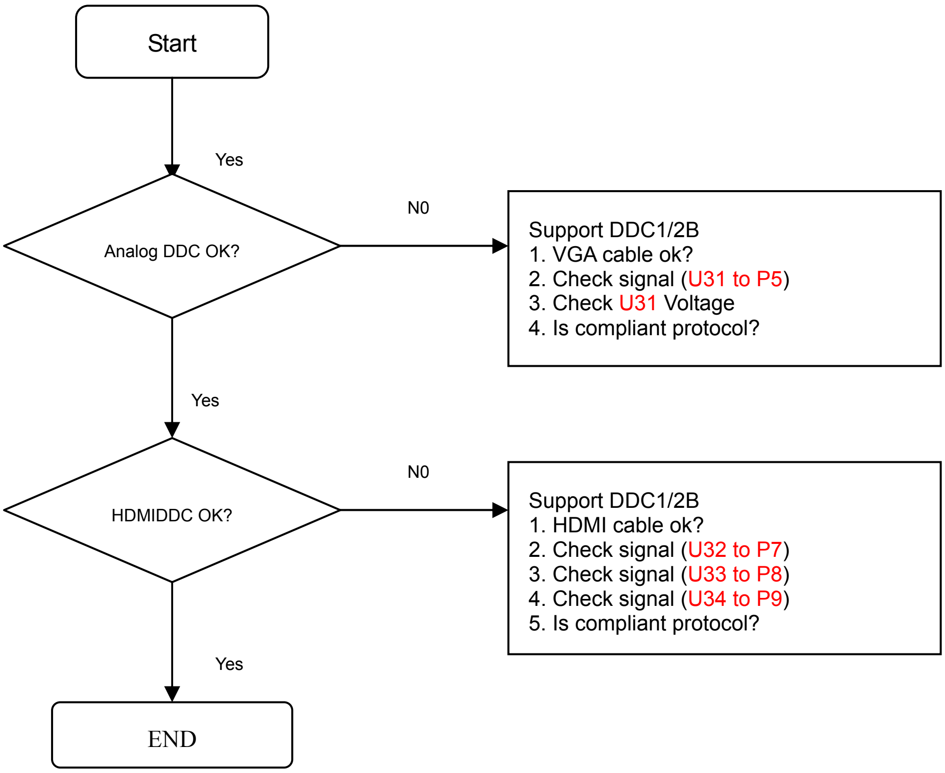
The voltage is about +3.3V

The voltage is about +1.25V

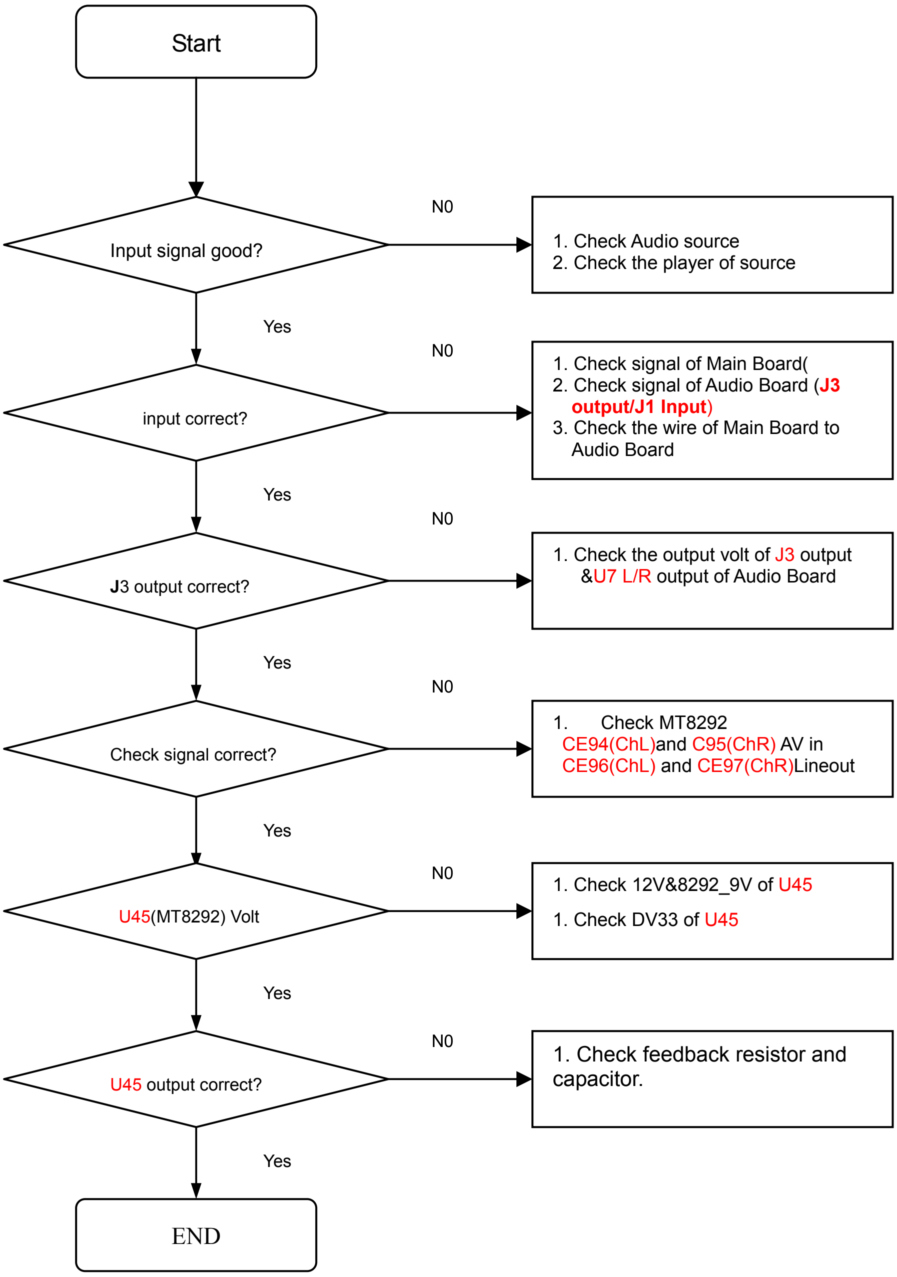
The voltage is about +2.5V

The voltage is about +1.1V

TROUBLE OF DDC READING

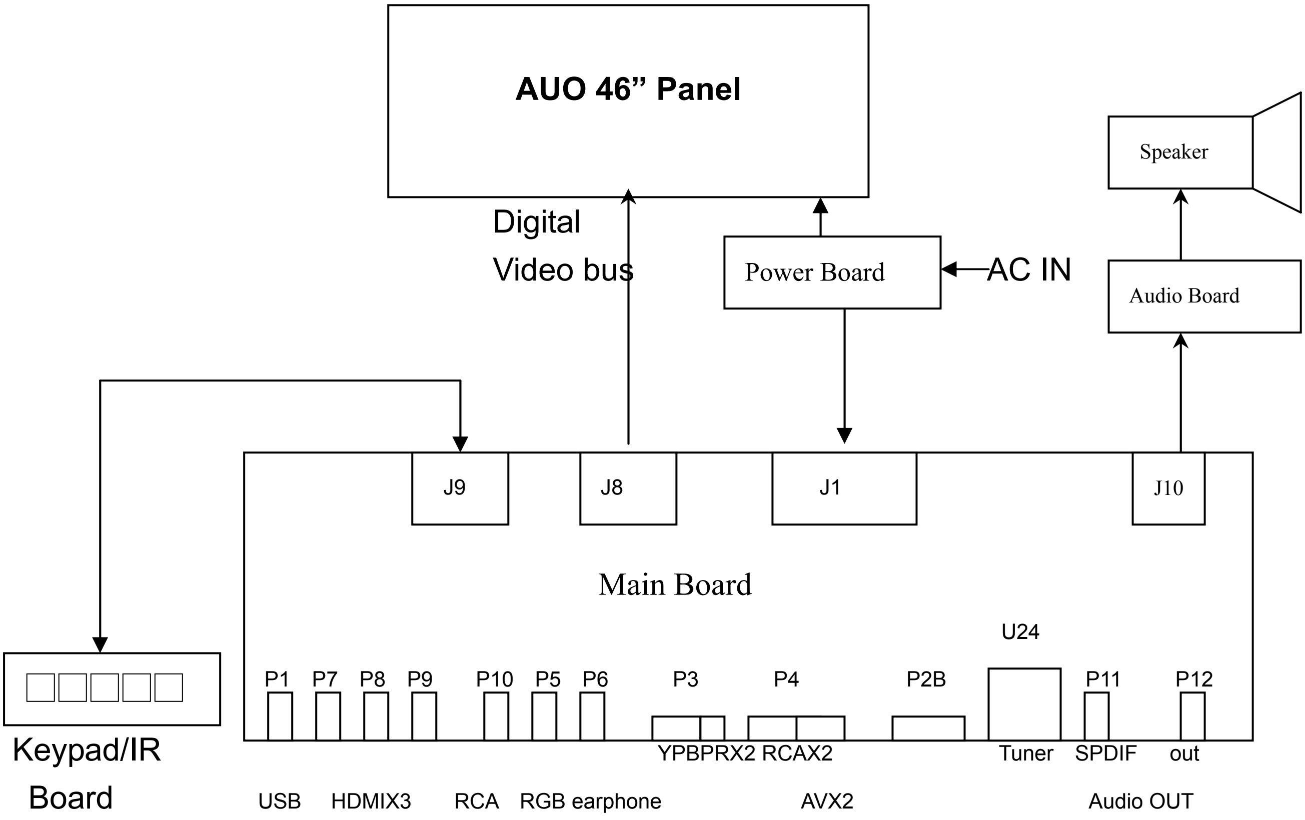

Start
Yes
Analog DDC OK?
N0
Support DDC1/2B
1. VGA cable ok?
2. Check signal (U31 to P5)
3. Check U31 Voltage
4. Is compliant protocol?
Yes
HDMIDDC OK?
N0
Support DDC1/2B
1. HDMI cable ok?
2. Check signal (U32 to P7)
3. Check signal (U33 to P8)
4. Check signal (U34 to P9)
5. Is compliant protocol?
Yes
END

(TV_SIDE, AUDIO) IS NOT DISPLAY CORRECTLY


Start
Input signal good?
N0
1. Check Audio source
2. Check the player of source
Yes
input correct?
N0
1. Check signal of Main Board(
2. Check signal of Audio Board (J3 output/J1 Input)
3. Check the wire of Main Board to Audio Board
Yes
J3 output correct?
N0
1. Check the output volt of J3 output &U7 L/R output of Audio Board
Yes
Check signal correct?
N0
1. Check MT8292 CE94(ChL)and C95(ChR) AV in CE96(ChL) and CE97(ChR)Lineout
Yes
U45(MT8292) Volt
N0
1. Check 12V&8292_9V of U45
1. Check DV33 of U45
Yes
U45 output correct?
N0
1. Check feedback resistor and capacitor.
Yes
END

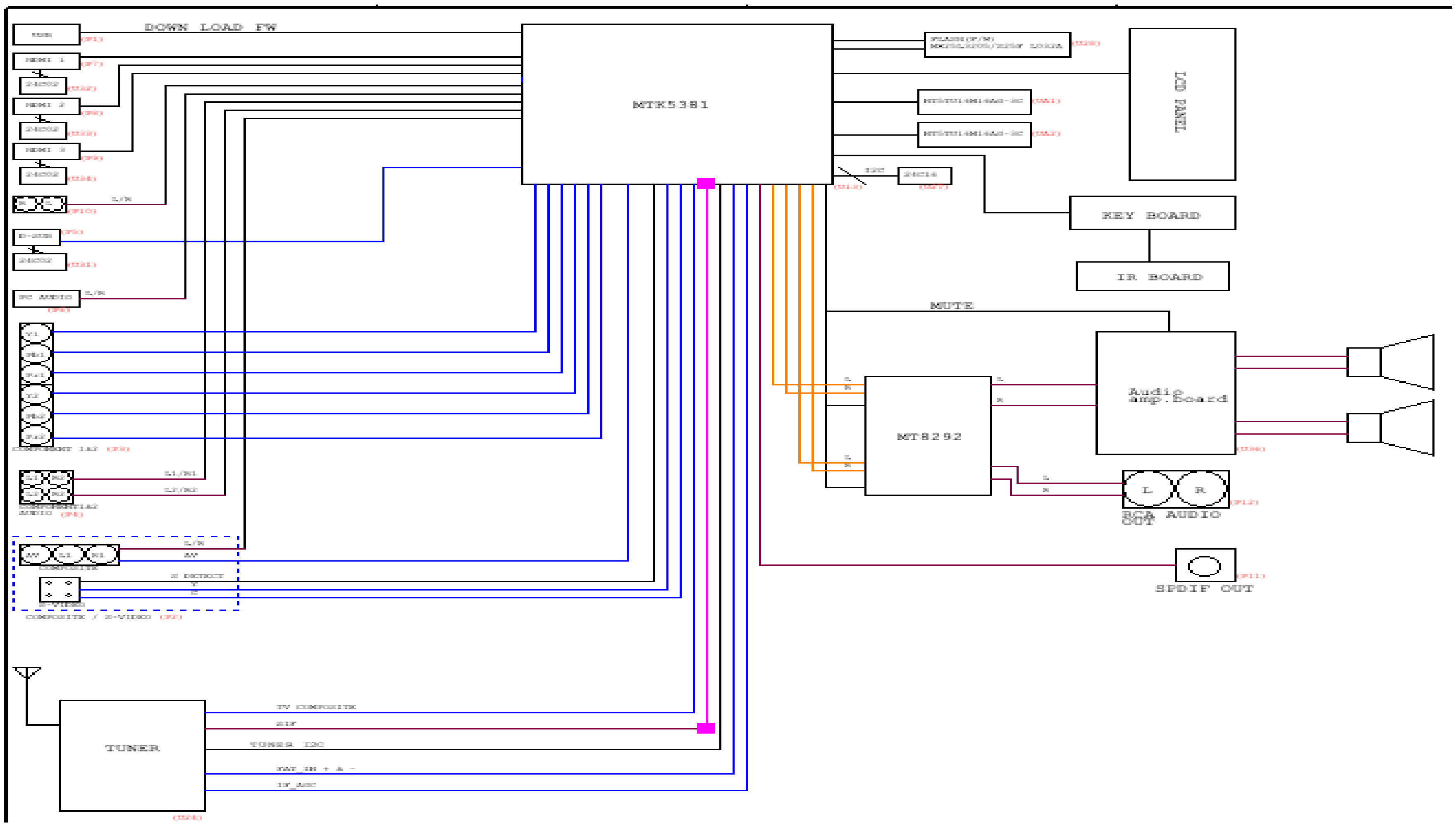
Chapter 10 Block Diagram

System Block Diagram



The TV system block diagram is powered by power board that transforms AC source of 100V~240V AC +/- 10% @ 50/60 HZ into DC 5V & 12V& 24Vsource. The main board receives different types of video signal into the MT5382 Ic. Afterward, the MT5382 Ic process the signals control the various functions of the monitor and outputs control signal, video signal and power to the LG.Philips 47" panel to be displayed. The power send to the panel is first processed by the inverter. The function of the inverter is to step up the voltage supplied by the main board to the power that is needed to light up the lamps in the panel. Simultaneously, the digital video signals are processed in the panel and the outcome determines the brightness, pixel on/off and the color displayed on the panel. The analog video signals of YPbPr, TV, PC and A/V all video signals are translated from analog signals into MT5382 generate the vertical and horizontal timing signals for display device. The analog audio of YpbPr, TV, PC and A/V is transmitting to MT5382 ADC processor. Then MT8292 DAC process to Amplifier. The purpose is process the input audio signal to control volume, bass, treble, surround, and balance. All functions are controllable by the main board. Plus, all functions in the IC boards are programmable using I2C Bus.

Main Board Block Diagram



Chapter 11 Spare Parts List

PART NO	DESCRIPTION	LOC	QTY	REMARK
0320-4000-0142	POWER CORD 110V UL/CSA 1800mm BLK N.M. (VINC)		1	
0390-5005-1273	SURFACE DIODE 3A 200V ER3D SMC LF	D88	1	
0390-6005-0293	Schottky Diode 0.2A 30V BAT54C-7-F SOT-23 L-F	D42	1	
0390-6005-2103	SCHOTTKY DIODE 0.5A/40V MBR0540T1G SOD-123 LF	D3	1	
0390-6005-5293	SCHOTTKY DIODE 3A 40V B340A-13-F SMA L-F	D2	1	
0390-6005-9293	SCHOTTKY DIODE 1A 40V B140-13-F SMA LF	D40	1	
0390-6006-5293	SCHOTTKY DIODE 3A 40V B340-13-F SMC L-F	D89	1	
0400-0681-2715	ZENER 6.46V-7.14V MMSZ5235B-7-F 1/2W SOD-123 L-F	D120	1	
0400-0851-2012	ZENER RLZ9.1B 8.57~9.01V 1/2W LL-34 LF	ZD1	1	
0410-2004-1614	TRANSISTOR NPN 2SC5706 SMD TP-FA 4PIN LF	Q19	1	
0410-3001-0612	TRANSISTOR 2SD2653K SMD SMT3 3PIN LF	Q16,Q18	2	
0430-3011-7032	IC FLASH 32M S25FL032A0LMFI001 SO-16 LF	U28	1	
0430-6015-5079	IC STEP DOWN CONVERTER AP1513SA SOP 8PIN LF	U18	1	
0430-7043-5092	IC SWITCH PI5C3257QE QSOP 16PIN LF	U43	1	
0430-7049-0903	IC DDR2 16Mx16 NT5TU16M16AG-3C BGA 84PIN LF	UA1,UA2	2	
0430-7049-2999	IC SCALER MT5382AR BGA 465PIN LF	U13	1	
0430-7049-8099	IC AUDIO MULTIPLEXER MT8292N QFN 56PIN LF	U45	1	
0980-0103-3160	MODULE TUNER DTVS205EH201A L-F	U24	1	
1801-0126-3010	FRONT BEZEL (VW46L)(ABS 94-HB/T52013) ASS'Y		1	
1801-0216-5010	REAR COVER (VW46L)(ABS 94-5V/T52013) ASS'Y		1	
1925-1000-4490	EPS FOAM_TL (VW46L FHDTV10A)		1	
1925-1000-4500	EPS FOAM_TR (VW46L FHDTV10A)		1	
1925-1000-4510	EPS FOAM_BL (VW46L FHDTV10A)		1	
1925-1000-4520	EPS FOAM_BR (VW46L FHDTV10A)		1	
1925-1000-4810	EPS FOAM_TM (VW46L FHDTV10A)		1	
1925-1100-0230	PE BAG 320*230*0.04T		2	
1925-1100-0280	PE BAG (180W*290L*0.04t)(PE-LD)(ACC.-1)		1	
1925-1100-0670	PE BAG (120.0*170.0*0.04t)(No.#6)		1	
1925-1100-2300	LD-PE BAG (1280*1050*0.07)		1	
1925-1200-7080	ACCESSARY BOX (330W*230D*50H)		1	
1925-1201-0410	CARTON TRAY (VW46L FHDTV10A)		1	
1925-1201-0580	CARTON VIZIO VW46L FHDTV10A		1	
1925-1300-7081	Brochure VIZIO Series		1	
1925-1300-9000	QSG VIZIO VW46L FHDTV10A		1	

PART NO	DESCRIPTION	LOC	QTY	REMARK
1925-1300-9010	MANUAL VIZIO VW46L FHDTV10A		1	
1925-1400-2711	Register CARD VIZIO Series		1	
1925-1400-3440	Warranty ＆ Repair Sheet VIZIO(orange paper)		1	
1925-1900-0610	CARTON JOINT (TM-32V)		4	
1936-1100-9670	B/C LBL VIZIO VW46L FHDTV10A		1	
1936-1300-1550	SERIAL NO.LBL byd:sign		1	
1936-1400-2760	CARTON LBL ASUS		1	
1947-1200-0310	ACETATE CLOTH TAPE (醋酸布膠帶) 27*75mm		8	
1947-1200-0400	ACETATE CLOTH TAPE (醋酸布膠帶) 20*45mm		11	
1947-1200-0820	ACETATE CLOTH TAPE (醋酸布膠帶) 60*45mm		1	
1947-1200-3680	ACETATE CLOTH TAPE (醋酸布膠帶) 40*80mm		1	
1947-1200-3870	MYLAR (18.0*28.0*0.6t)(VX32L)		1	
1947-1200-3900	SPONGE (22.0L*55.0W*0.6t)		4	
1947-1200-4160	SPONGE (22.0L*6.0W*0.6t)		4	
1947-1200-4300	INSULATOR(D16*d10*t1.2)(TRANSPARENT)		1	
1947-1500-3120	CR Sponge 17*8mm*3.0t (VX20L HDTV)		7	
1947-1700-0230	GASKET BLOCK (10.0W* 20.0L*17.0H)(HP Obi Wan-24)		7	
1947-1800-0490	GASKET BLOCK (12L*10W*2.5Hmm) HOLE 6 φ		2	
1947-9900-0750	GLUE SUPER X 8008(Clear,135ml)		0.0004	
3632-0052-0156	DISPLAY BD ASS'Y VX32L HDTV2		1	
3642-0042-0189	IR BD ASS'Y VX32L HDTV20A		1	
3646-0082-0150	MAIN BD ASS'Y VW46L FHDTV10A		1	
3647-0022-0137	AUDIO BD ASS'Y VO47L FHDTV10		1	

Chapter 12 Complete Parts List

9646-8500-5143 LCD TV 46" VW46L FHDTV10A_AUO (ABS, T52013)

ITEM	M/S	LOCATION	PART NO.	DESCRPTION	QTY
1			3646-0022-0334	BASE ASS'Y VW46L FHDTV10A (ABS, T52013)	1
2			3646-0072-0312	PACKING ASS'Y VW46L FHDTV10A	1
3			3646-0102-0331	PANEL ASS'Y VW46L FHDTV10A_AUO (ABS, T52013)	1

3646-0022-0334 BASE ASS'Y VW46L FHDTV10A (ABS, T52013)

ITEM	M/S	LOCATION	PART NO.	DESCRPTION	QTY
1			1701-0524-9020	BASE (VW42L)(ABS 94-HB/SD0150,T52013)	1
2			1701-1000-0430	BASE FOOT (TM-32V)	6

3646-0072-0312 PACKING ASS'Y VW46L FHDTV10A

ITEM	M/S	LOCATION	PART NO.	DESCRPTION	QTY
1			1701-0800-4280	REAR PLATE VIZIO VW46L FHDTV10A	1
2			1925-1000-4490	EPS FOAM_TL (VW46L FHDTV10A)	1
3			1925-1000-4500	EPS FOAM_TR (VW46L FHDTV10A)	1
9			1925-1000-4510	EPS FOAM_BL (VW46L FHDTV10A)	1
10			1925-1000-4520	EPS FOAM_BR (VW46L FHDTV10A)	1
11			1925-1000-4810	EPS FOAM_TM (VW46L FHDTV10A)	1
12			1925-1100-2300	LD-PE BAG (1280*1050*0.07)	1
13			1925-1201-0410	CARTON TRAY (VW46L FHDTV10A)	1
14			1925-1201-0580	CARTON VIZIO VW46L FHDTV10A	1
15			1925-1900-0610	CARTON JOINT (TM-32V)	4
16			1936-1100-9670	B/C LBL VIZIO VW46L FHDTV10A	1
17			1936-1300-1550	SERIAL NO.LBL byd:sign	1
18			1936-1400-2760	CARTON LBL ASUS	1
19			3646-0062-0393	ACCESSARY ASS'Y VW46L FHDTV10A	1

3646-0102-0331 PANEL ASS'Y VW46L FHDTV10A_AUO (ABS, T52013)

ITEM	M/S	LOCATION	PART NO.	DESCRPTION	QTY
1			0211-0460-0577	LCD MODULE 46.0" TFT T460HW02 V1 (AUO)	1
2	SS		0211-0460-0777	LCD MODULE 46.0" T460HW02 V1 (AUO)(300 series)	
3			0260-0000-0320	AC INLET +VHR5P 1617#22 430mm 1015#18 80mm+CORE	1
4			0335-1006-1830	SPK BOX 10W 6ohm 2way W/CORE 970/460(FS0000171AB)LF	1
5			0460-1004-0380	WH A2001H02-4P/A2001H02-4P 1061#26 180mm	1
6			0460-1007-0370	WH A2001-7P/A2001-4P 2464#26 110mm	1
7			0460-1104-0140	WH A2501-4P/A2543-4P 1007#22 220mm+CORE	1
8			0460-3010-0191	WH A1251H02-10P/A1251H02-10P 1571#28 480mm	1
9			0460-3451-0070	WH FI-RE51HL-P240430 1571#30 320mm+ABSORBER*2	1
10			0460-4015-0140	WH A2543-15P/A2001-13P 1007#24 120mm	1
11			0500-0408-0530	POWER/INVERTER ASS'Y BK01094.011 LF	1
12			0950-0000-0010	License: Dolbly-AC3 Two-Channel Dolby Digital Deco	1
13			0950-0000-0020	License: MPEG-LA Consumer Products	1
14			0950-0000-0030	License: HDMI	1
15			0960-0000-0100	SOFTWARE MTK HDCP KEY w/mask CODE (China)	1
16			0980-0700-0120	LED BACKLIGHT 18*50*2.7 LP1063-S558 580mm(BLK F)LF	1
17			1701-0900-2530	MYLAR (282.0L*192.0W*0.5t)(VW46L FHDTV10A)	1
18			1701-1500-0690	WIRE SADDLE (CH-14)	6
19			1701-1500-1550	SPACER SUPPORT MC-8(GV46L HDTV)	1
20			1701-1500-2670	USB CONNECTOR COVER(USBC-2)	1
21			1712-0101-0540	WALL MOUNT SUPPORT (VX37L HDTV)	4
22			1712-0101-2100	MAIN SHIELD(SECC T=0.8mm)(VO40L FHDTV10A)	1
23			1712-0101-2600	PANEL BKT_L (VW46L FHDTV10A)(SECC,SGLCC T=1.0)	1
24			1712-0101-2610	PANEL BKT_R (VW46L FHDTV10A)(SECC,SGLCC T=1.0)	1
25			1712-0101-2620	SUPPORT BASE BKT (VW46L FHDTV10A)(SECC,SGLCC	2
26			1712-0101-2960	CHASSIS (VW46L FHDTV10A_AUO)(SECC,SGLCC T=0.8)	1
27			1720-0003-0650	MAC. SCREW-MB M3.0*6.0L,BLK-Ni	15
28			1720-0204-0620	MAC. SCREW-MBGW M4.0*6.0L, Ni	1
29			1720-1005-0550	MAC. SCREW-MP M5.0*5.0L,BLK-Ni	10
30			1720-1503-0620	MAC.SCREW-MPSWF M3.0*6.0L Ni	20
31			1720-1504-0620	MAC. SCREW-MPSWF M4.0*6.0L,NI	8
32			1720-3003-0820	MAC.SCREW-MF M3.0*8.0L,NI	6
33			1720-5004-0520	MAC.SCREW-MI M4.0*5.0L,Ni	4
34			1720-7344-0820	MAC. SCREW-MHSW #4-40*8.0L,Ni	2
35			1721-0003-0820	TAP. SCREW-TB #3.0*8.0L,NI	8
36			1721-0004-1050	TAP. SCREW-TP #4.0*10.0L, BLK-Ni	26
37			1721-0004-2050	TAP. SCREW-TB #4.0*20.0L, BLK-Ni	8

ITEM	M/S	LOCATION	PART NO.	DESCRPTION	QTY
38			1721-4104-1220	TAP. SCREW-TRF #4.0*12.0L,Ni	6
39			1725-0004-0850	MAC SCREW-MB M4.0*8.0L,BLK_Ni(NYLOK)	12
40			1749-5080-0020	NUT 3/8 ” -32(W12.5*2.0t,Ni)(FOR TUNER)	1
41			1801-0126-3010	FRONT BEZEL (VW46L)(ABS 94-HB/T52013) ASS'Y	1
42			1801-0216-5010	REAR COVER (VW46L)(ABS 94-5V/T52013) ASS'Y	1
43			1947-1200-0310	ACETATE CLOTH TAPE (醋酸布膠帶) 27*75mm	8
44			1947-1200-0400	ACETATE CLOTH TAPE (醋酸布膠帶) 20*45mm	11
45			1947-1200-0820	ACETATE CLOTH TAPE (醋酸布膠帶) 60*45mm	1
46			1947-1200-3680	ACETATE CLOTH TAPE (醋酸布膠帶) 40*80mm	1
47			1947-1200-3870	MYLAR (18.0*28.0*0.6t)(VX32L)	1
48			1947-1200-3900	SPONGE (22.0L*55.0W*0.6t)	4
49			1947-1200-4160	SPONGE (22.0L*6.0W*0.6t)	4
50			1947-1200-4300	INSULATOR(D16*d10*t1.2)(TRANSPARENT)	1
51			1947-1500-3120	CR Sponge 17*8mm*3.0t (VX20L HDTV)	7
52			1947-1700-0230	GASKET BLOCK (10.0W* 20.0L*17.0H)(HP Obi Wan-24)	7
53			1947-1800-0490	GASKET BLOCK (12L*10W*2.5Hmm) HOLE 6 φ	2
54			3632-0052-0156	DISPLAY BD ASS'Y VX32L HDTV20A	1
55			3642-0042-0189	IR BD ASS'Y VX32L HDTV20A	1
56			3646-0082-0150	MAIN BD ASS'Y VW46L FHDTV10A_AUO (HDCP)	1
57			3647-0022-0137	AUDIO BD ASS'Y VO47L FHDTV10A	1

3632-0052-0156 DISPLAY BD ASS'Y VX32L HDTV20A

ITEM	M/S	LOCATION	PART NO.	DESCRPTION	QTY
1			363200520156M	DISPLAY BD ASS'Y VX32L HDTV20A MI	1
2			363200520156S	DISPLAY BD ASS'Y VX32L HDTV20A SMD	1

3642-0042-0189 IR BD ASS'Y VX32L HDTV20A

ITEM	M/S	LOCATION	PART NO.	DESCRPTION	QTY
1			364200420189M	IR BD ASS'Y VX32L HDTV20A MI	1
2			364200420189S	IR BD ASS'Y VX32L HDTV20A SMD	1

3646-0062-0393 ACCESSARY ASS'Y VW46L FHDTV10A

ITEM	M/S	LOCATION	PART NO.	DESCRPTION	QTY
1			0320-4000-0142	POWER CORD 110V UL/CSA 1800mm BLK N.M. (VINC)	1
2			0602-3000-0020	Battery Zn-Carbon 1.5V AA	2
3	SS		0602-5000-0020	Battery Zn-Carbon 1.5V AA(R6P/2S) MITSUBISHI	
4			0980-0305-3000	REMOTE CONTROL VR2 (EURT29A001) VIZIO LF	1
5			1925-1100-0230	PE BAG 320*230*0.04T	2
6			1925-1100-0280	PE BAG (180W*290L*0.04t)(PE-LD)(ACC.-1)	1
7			1925-1200-7080	ACCESSARY BOX (330W*230D*50H)	1
8			1925-1300-7081	Brochure VIZIO Series	1
9			1925-1300-9000	QSG VIZIO VW46L FHDTV10A	1
10			1925-1300-9010	MANUAL VIZIO VW46L FHDTV10A	1
11			1925-1400-2711	Register CARD VIZIO Series	1
12			1925-1400-3440	Warranty ＆ Repair Sheet VIZIO(orange paper)	1
13			3850-0012-0395	SAFETY STRAP ASS'Y (VINC)	1

3646-0082-0150 MAIN BD ASS'Y VW46L FHDTV10A_AUO (HDCP)

ITEM	M/S	LOCATION	PART NO.	DESCRPTION	QTY
1			364600820150A	MAIN BD ASS'Y VW46L FHDTV10A_AUO AI	1
2			364600820150M	MAIN BD ASS'Y VW46L FHDTV10A_AUO MI	1
3			364600820150S	MAIN BD ASS'Y VW46L FHDTV10A_AUO SMD	1

3647-0022-0137 AUDIO BD ASS'Y VO47L FHDTV10A

ITEM	M/S	LOCATION	PART NO.	DESCRPTION	QTY
1			364700220137A	AUDIO BD ASS'Y VO47L FHDTV10A AI	1
2			364700220137M	AUDIO BD ASS'Y VO47L FHDTV10A MI	1
3			364700220137S	AUDIO BD ASS'Y VO47L FHDTV10A SMD	1

363200520156M DISPLAY BD ASS'Y VX32L HDTV20A MI

ITEM	M/S	LOCATION	PART NO.	DESCRPTION	QTY
1		CON1	0451-1250-1066	WAFER 1.25mm 10P 90' DIP KINK (M240110R) L-F	1
2	SS		0451-1250-1063	WAFER 1.25mm 10P 90' KINK (A1251WR0-10P) L-F	
3		CON3	0451-1250-0366	WAFER 1.25mm 3P 90' DIP KINK (M24013R) L-F	1
4	SS		0451-1250-0363	WAFER 1.25mm 3P 90' KINK (A1251WR0-3P) L-F	
5		J2	0451-2000-0466	WAFER 2.0mm 4P 90' DIP KINK (M24264R) L-F	1
6	SS		0451-2003-0463	WAFER 2.00mm 4P 90' KINK (A2001WR2-4P) L-F	
7		SW1	0220-7020-0130	SW TACT 6*6mm 180' 160g SFKHHAM2525 L-F	1
8		SW2	0220-7020-0130	SW TACT 6*6mm 180' 160g SFKHHAM2525 L-F	1
9		SW3	0220-7020-0130	SW TACT 6*6mm 180' 160g SFKHHAM2525 L-F	1
10		SW4	0220-7020-0130	SW TACT 6*6mm 180' 160g SFKHHAM2525 L-F	1
11		SW5	0220-7020-0130	SW TACT 6*6mm 180' 160g SFKHHAM2525 L-F	1
12		SW6	0220-7020-0130	SW TACT 6*6mm 180' 160g SFKHHAM2525 L-F	1
13		SW7	0220-7020-0130	SW TACT 6*6mm 180' 160g SFKHHAM2525 L-F	1

363200520156S DISPLAY BD ASS'Y VX32L HDTV20A SMD

ITEM	M/S	LOCATION	PART NO.	DESCRPTION	QTY
1			0174-1770-1844	PCB DISPLAY BD 150*20(VX37L HDTV10A)(1:10)	1
2		CD1	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
3	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
4		CD2	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
5	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
6		CD3	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
7	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
8		CD4	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
9	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
10		RD1	0130-0000-1859	RES. CF 0.0ohm 1/8W J 1206	1
11		RD10	0130-0000-1859	RES. CF 0.0ohm 1/8W J 1206	1
12		RD11	0130-2001-1654	RES CF 2Kohm 1/16W J 0402	1
13		RD12	0130-2001-1654	RES CF 2Kohm 1/16W J 0402	1
14		RD13	0130-2001-1654	RES CF 2Kohm 1/16W J 0402	1
15		RD14	0130-1001-1654	RES. CF 1Kohm 1/16W J 0402	1
16		RD15	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
17		RD16	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
18		RD17	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
19		RD2	0130-2401-1654	RES. CF 2.4 Kohm 1/16W J 0402	1
20		RD3	0130-2001-1654	RES CF 2Kohm 1/16W J 0402	1
21		RD4	0130-2001-1654	RES CF 2Kohm 1/16W J 0402	1
22		RD5	0130-2001-1654	RES CF 2Kohm 1/16W J 0402	1
23		RD6	0130-1001-1654	RES. CF 1Kohm 1/16W J 0402	1
24		RD7	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
25		RD8	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1

364200420189M IR BD ASS'Y VX32L HDTV20A MI

ITEM	M/S	LOCATION	PART NO.	DESCRPTION	QTY
1		JR1	0451-2000-0466	WAFER 2.0mm 4P 90' DIP KINK (M24264R) L-F	1
2	SS		0451-2003-0463	WAFER 2.00mm 4P 90' KINK (A2001WR2-4P) L-F	
3		UR1	0980-0200-8170	MODULE. IR RECEIVER 37.9K FM-6038LM-5CN LF	1
4		UR1S	1701-1500-0360	IR HOLDER (TM-15A)	1

364200420189S IR BD ASS'Y VX32L HDTV20A SMD

ITEM	M/S	LOCATION	PART NO.	DESCRPTION	QTY
1			0171-1671-0501	PCB IR BD FR4 66.5*12*1.6t D (GV42L HDTV)(1:20)	1
2		CR2	0111-3106-1614	C/M Multi. 10uF 16V X7R K 1206	1
3	SS		0111-3106-1114	C/M MULTI 10uF 10V X7R K 1206	
4	SS		0112-3106-1614	C/M MULTI 10uF 16V X7R 1206	
5	SS		0115-7106-1614	C/M MULTI 10uF 16V X7R 1206	
6		CR3	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
7	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
8		LR1	0370-0000-6452	CHIP BEAD CORE 80ohm (MLB-201209-0080A-N2)	1
9		RR1	0130-4709-1654	RES. CF 47ohm 1/16W J 0402	1
10		RR2	0130-4709-1654	RES. CF 47ohm 1/16W J 0402	1
11		ZDR1	0400-0881-5012	ZENER 8.85~9.23V UDZSTE-179.1B 1/5W SOD-323	1

364600820150A MAIN BD ASS'Y VW46L FHDTV10A_AUO AI

ITEM	M/S	LOCATION	PART NO.	DESCRPTION	QTY
1		CE1	0103-1221-1311	E/C VT 220uF 25V 105'C F-T (8*11.5mm)	1
2	SS		0100-1221-1311	E/C SH 220uF 25V 105'C F-T (8*11mm)	
3		CE10	0103-1221-1311	E/C VT 220uF 25V 105'C F-T (8*11.5mm)	1
4	SS		0100-1221-1311	E/C SH 220uF 25V 105'C F-T (8*11mm)	
5		CE100	0103-1100-1511	E/C VT 10uF 50V 105'C F-T (5*11mm)	1
6	SS		0100-1100-1511	E/C SH 10uF 50V 105'C F-T (5*11mm)	
7		CE11	0103-1101-1211	E/C VZ 100uF 16V 105'C F-T (5*11mm)	1
8		CE12	0103-1221-1311	E/C VT 220uF 25V 105'C F-T (8*11.5mm)	1
9	SS		0100-1221-1311	E/C SH 220uF 25V 105'C F-T (8*11mm)	
10		CE14	0103-1221-1311	E/C VT 220uF 25V 105'C F-T (8*11.5mm)	1
11	SS		0100-1221-1311	E/C SH 220uF 25V 105'C F-T (8*11mm)	
12		CE18	0103-1221-1311	E/C VT 220uF 25V 105'C F-T (8*11.5mm)	1
13	SS		0100-1221-1311	E/C SH 220uF 25V 105'C F-T (8*11mm)	
14		CE19	0103-1221-1311	E/C VT 220uF 25V 105'C F-T (8*11.5mm)	1
15	SS		0100-1221-1311	E/C SH 220uF 25V 105'C F-T (8*11mm)	
16		CE2	0103-1221-1311	E/C VT 220uF 25V 105'C F-T (8*11.5mm)	1
17	SS		0100-1221-1311	E/C SH 220uF 25V 105'C F-T (8*11mm)	
18		CE20	0103-1221-1311	E/C VT 220uF 25V 105'C F-T (8*11.5mm)	1
19	SS		0100-1221-1311	E/C SH 220uF 25V 105'C F-T (8*11mm)	
20		CE21	0103-1101-1211	E/C VZ 100uF 16V 105'C F-T (5*11mm)	1
21		CE22	0103-1221-1211	E/C VZ 220uF 16V 105'C F-T (6.3*11mm)	1
22		CE23	0103-1101-1211	E/C VZ 100uF 16V 105'C F-T (5*11mm)	1
23		CE24	0103-1221-1211	E/C VZ 220uF 16V 105'C F-T (6.3*11mm)	1
24		CE25	0103-1471-1211	E/C VZ 470uF 16V 105'C F-T (8*11.5mm)	1
25	SS		0100-1471-1211	E/C SH 470uF 16V 105'C F-T (8*11mm)	
26		CE27	0103-1221-1311	E/C VT 220uF 25V 105'C F-T (8*11.5mm)	1
27	SS		0100-1221-1311	E/C SH 220uF 25V 105'C F-T (8*11mm)	
28		CE28	0103-1100-1511	E/C VT 10uF 50V 105'C F-T (5*11mm)	1
29	SS		0100-1100-1511	E/C SH 10uF 50V 105'C F-T (5*11mm)	
30		CE3	0103-1220-1511	E/C VT 22uF 50V 105'C F-T (5*11mm)	1
31	SS		0100-1220-1511	E/C SH 22uF 50V 105'C F-T (5*11mm)	
32		CE30	0103-1101-1211	E/C VZ 100uF 16V 105'C F-T (5*11mm)	1
33		CE31	0103-1471-1211	E/C VZ 470uF 16V 105'C F-T (8*11.5mm)	1
34	SS		0100-1471-1211	E/C SH 470uF 16V 105'C F-T (8*11mm)	
35		CE32	0103-1101-1211	E/C VZ 100uF 16V 105'C F-T (5*11mm)	1
36		CE33	0103-1101-1211	E/C VZ 100uF 16V 105'C F-T (5*11mm)	1
37		CE34	0103-1101-1211	E/C VZ 100uF 16V 105'C F-T (5*11mm)	1

ITEM	M/S	LOCATION	PART NO.	DESCRPTION	QTY
38		CE35	0103-1100-1511	E/C VT 10uF 50V 105'C F-T (5*11mm)	1
39	SS		0100-1100-1511	E/C SH 10uF 50V 105'C F-T (5*11mm)	
40		CE36	0103-1100-1511	E/C VT 10uF 50V 105'C F-T (5*11mm)	1
41	SS		0100-1100-1511	E/C SH 10uF 50V 105'C F-T (5*11mm)	
42		CE4	0103-1220-1511	E/C VT 22uF 50V 105'C F-T (5*11mm)	1
43	SS		0100-1220-1511	E/C SH 22uF 50V 105'C F-T (5*11mm)	
44		CE41	0103-1100-1511	E/C VT 10uF 50V 105'C F-T (5*11mm)	1
45	SS		0100-1100-1511	E/C SH 10uF 50V 105'C F-T (5*11mm)	
46		CE42	0103-1100-1511	E/C VT 10uF 50V 105'C F-T (5*11mm)	1
47	SS		0100-1100-1511	E/C SH 10uF 50V 105'C F-T (5*11mm)	
48		CE43	0103-1100-1511	E/C VT 10uF 50V 105'C F-T (5*11mm)	1
49	SS		0100-1100-1511	E/C SH 10uF 50V 105'C F-T (5*11mm)	
50		CE44	0103-1100-1511	E/C VT 10uF 50V 105'C F-T (5*11mm)	1
51	SS		0100-1100-1511	E/C SH 10uF 50V 105'C F-T (5*11mm)	
52		CE45	0103-1100-1511	E/C VT 10uF 50V 105'C F-T (5*11mm)	1
53	SS		0100-1100-1511	E/C SH 10uF 50V 105'C F-T (5*11mm)	
54		CE46	0103-1100-1511	E/C VT 10uF 50V 105'C F-T (5*11mm)	1
55	SS		0100-1100-1511	E/C SH 10uF 50V 105'C F-T (5*11mm)	
56		CE47	0103-1100-1511	E/C VT 10uF 50V 105'C F-T (5*11mm)	1
57	SS		0100-1100-1511	E/C SH 10uF 50V 105'C F-T (5*11mm)	
58		CE49	0103-1100-1511	E/C VT 10uF 50V 105'C F-T (5*11mm)	1
59	SS		0100-1100-1511	E/C SH 10uF 50V 105'C F-T (5*11mm)	
60		CE50	0103-1101-1211	E/C VZ 100uF 16V 105'C F-T (5*11mm)	1
61		CE55	0103-1100-1511	E/C VT 10uF 50V 105'C F-T (5*11mm)	1
62	SS		0100-1100-1511	E/C SH 10uF 50V 105'C F-T (5*11mm)	
63		CE58	0103-1471-1211	E/C VZ 470uF 16V 105'C F-T (8*11.5mm)	1
64	SS		0100-1471-1211	E/C SH 470uF 16V 105'C F-T (8*11mm)	
65		CE6	0103-1221-1311	E/C VT 220uF 25V 105'C F-T (8*11.5mm)	1
66	SS		0100-1221-1311	E/C SH 220uF 25V 105'C F-T (8*11mm)	
67		CE61	0103-1331-1211	E/C VT 330uF 16V 105'C F-T (8*11.5mm)	1
68	SS		0100-1331-1211	E/C SH 330uF 16V 105'C F-T (8*11mm)	
69		CE63	0103-1101-1211	E/C VZ 100uF 16V 105'C F-T (5*11mm)	1
70		CE64	0103-1220-1511	E/C VT 22uF 50V 105'C F-T (5*11mm)	1
71	SS		0100-1220-1511	E/C SH 22uF 50V 105'C F-T (5*11mm)	
72		CE65	0103-1221-1311	E/C VT 220uF 25V 105'C F-T (8*11.5mm)	1
73	SS		0100-1221-1311	E/C SH 220uF 25V 105'C F-T (8*11mm)	
74		CE66	0103-1221-1211	E/C VZ 220uF 16V 105'C F-T (6.3*11mm)	1
75		CE67	0103-1221-1211	E/C VZ 220uF 16V 105'C F-T (6.3*11mm)	1
76		CE7	0103-1221-1311	E/C VT 220uF 25V 105'C F-T (8*11.5mm)	1
77	SS		0100-1221-1311	E/C SH 220uF 25V 105'C F-T (8*11mm)	

ITEM	M/S	LOCATION	PART NO.	DESCRPTION	QTY
78		CE70	0103-1100-1511	E/C VT 10uF 50V 105'C F-T (5*11mm)	1
79	SS		0100-1100-1511	E/C SH 10uF 50V 105'C F-T (5*11mm)	
80		CE71	0103-1100-1511	E/C VT 10uF 50V 105'C F-T (5*11mm)	1
81	SS		0100-1100-1511	E/C SH 10uF 50V 105'C F-T (5*11mm)	
82		CE72	0103-1100-1511	E/C VT 10uF 50V 105'C F-T (5*11mm)	1
83	SS		0100-1100-1511	E/C SH 10uF 50V 105'C F-T (5*11mm)	
84		CE73	0103-1100-1511	E/C VT 10uF 50V 105'C F-T (5*11mm)	1
85	SS		0100-1100-1511	E/C SH 10uF 50V 105'C F-T (5*11mm)	
86		CE77	0103-1100-1511	E/C VT 10uF 50V 105'C F-T (5*11mm)	1
87	SS		0100-1100-1511	E/C SH 10uF 50V 105'C F-T (5*11mm)	
88		CE78	0103-1100-1511	E/C VT 10uF 50V 105'C F-T (5*11mm)	1
89	SS		0100-1100-1511	E/C SH 10uF 50V 105'C F-T (5*11mm)	
90		CE8	0103-1221-1311	E/C VT 220uF 25V 105'C F-T (8*11.5mm)	1
91	SS		0100-1221-1311	E/C SH 220uF 25V 105'C F-T (8*11mm)	
92		CE80	0103-1220-1511	E/C VT 22uF 50V 105'C F-T (5*11mm)	1
93	SS		0100-1220-1511	E/C SH 22uF 50V 105'C F-T (5*11mm)	
94		CE81	0103-1100-1511	E/C VT 10uF 50V 105'C F-T (5*11mm)	1
95	SS		0100-1100-1511	E/C SH 10uF 50V 105'C F-T (5*11mm)	
96		CE82	0103-1101-1211	E/C VZ 100uF 16V 105'C F-T (5*11mm)	1
97		CE83	0103-1101-1211	E/C VZ 100uF 16V 105'C F-T (5*11mm)	1
98		CE9	0103-1221-1311	E/C VT 220uF 25V 105'C F-T (8*11.5mm)	1
99	SS		0100-1221-1311	E/C SH 220uF 25V 105'C F-T (8*11mm)	
100		CE90	0103-1101-1211	E/C VZ 100uF 16V 105'C F-T (5*11mm)	1
101		CE91	0103-1101-1211	E/C VZ 100uF 16V 105'C F-T (5*11mm)	1
102		CE94	0103-1100-1511	E/C VT 10uF 50V 105'C F-T (5*11mm)	1
103	SS		0100-1100-1511	E/C SH 10uF 50V 105'C F-T (5*11mm)	
104		CE95	0103-1100-1511	E/C VT 10uF 50V 105'C F-T (5*11mm)	1
105	SS		0100-1100-1511	E/C SH 10uF 50V 105'C F-T (5*11mm)	
106		CE96	0103-1100-1511	E/C VT 10uF 50V 105'C F-T (5*11mm)	1
107	SS		0100-1100-1511	E/C SH 10uF 50V 105'C F-T (5*11mm)	
108		CE97	0103-1100-1511	E/C VT 10uF 50V 105'C F-T (5*11mm)	1
109	SS		0100-1100-1511	E/C SH 10uF 50V 105'C F-T (5*11mm)	
110		CE98	0103-1101-1211	E/C VZ 100uF 16V 105'C F-T (5*11mm)	1

364600820150M MAIN BD ASS'Y VW46L FHDTV10A_AUO MI

ITEM	M/S	LOCATION	PART NO.	DESCRPTION	QTY
1		CE13	0103-6471-1312	E/C HF 470uF 25V 105'C (10*16mm)	1
2	SS		0107-2471-1312	E/C LXY 470uF 25V 105'C NF (10*16mm)	
3	SS		0109-2471-1312	E/C RLK 470uF 25V 105'C NF (10*16mm)	
4		CE16	0103-1222-1212	E/C VT 2200uF 16V 105'C (12.5*25) L-F	1
5	SS		0103-6222-1112	E/C HF 2200uF 10V 105'C F (12.5*20mm)	
6		CE17	0103-6471-1312	E/C HF 470uF 25V 105'C (10*16mm)	1
7	SS		0107-2471-1312	E/C LXY 470uF 25V 105'C NF (10*16mm)	
8	SS		0109-2471-1312	E/C RLK 470uF 25V 105'C NF (10*16mm)	
9		CE29	0103-6102-1212	E/C HF 1000uF 16V 105'C F (10*20)	1
10	SS		0107-2102-1212	E/C LXY 1000uF 16V 105'C NF (10*20mm)	
11	SS		0109-2102-1212	E/C RLK 1000uF 16V 105'C NF (10*20mm)	
12		CE57	0103-6102-1212	E/C HF 1000uF 16V 105'C F (10*20)	1
13	SS		0107-2102-1212	E/C LXY 1000uF 16V 105'C NF (10*20mm)	
14	SS		0109-2102-1212	E/C RLK 1000uF 16V 105'C NF (10*20mm)	
15		J1	0451-2000-1366	WAFER 2.0mm 13P 90' DIP KINK (M242613R) L-F	1
16	SS		0451-2003-1363	WAFER 2.00mm 13P 90' KINK (A2001WR2-13P) L-F	
17		J10	0451-2000-0766	WAFER 2.0mm 7P 90' DIP KINK (M24267R) L-F	1
18	SS		0451-2003-0763	WAFER 2.00mm 7P 90' KINK (A2001WR2-7P) L-F	
19		J2	0451-2000-0406	WAFER 2.0mm 4P 180' DIP KINK (M24264) L-F	1
20	SS		0451-2003-0403	WAFER 2.00mm 4P 180' KINK (A2001WV2-4P) L-F	
21		J9	0451-1250-1066	WAFER 1.25mm 10P 90' DIP KINK (M240110R) L-F	1
22	SS		0451-1250-1063	WAFER 1.25mm 10P 90' KINK (A1251WR0-10P) L-F	
23		L4	0361-2027-0030	COIL CHOKE 27UH 2.5A 11*12 TSL1112RA-270K2R5-PF	1
24	SS		0361-2027-0040	COIL CHOKE 27UH 3A 12*15 DIP LF-270K33201 LF	
25		L57	0370-0000-1011	FERRITE CORE RH 3.5X6X1.0(W)X2 L-F	1
26		L6	0361-2022-1040	COIL CHOKE 220uH 1.6A 12.5*15(TSL1215-221K1R6-TPF)LF	1
27		P1	0300-6200-0070	USB CONN. A TYPE 90' SIDE (5401-065-400-DO) L-F	1
28	SS		0300-6200-0090	USB CONN. A TYPE 90' SIDE (UB31123-K1-4F) L-F	
29		P10	0302-9020-0115	RCA JACK 2ROW 2I/O (W-R) (NK-1416-20T) L-F	1
30	SS		0302-9020-0180	RCA JACK 2ROW 2I/O (W-R) (WSP-202V2-01H) L-F	
31		P11	0300-6400-0031	OPTO CONN. Transmitter (134-0029-399A) L-F	1
32		P12	0302-9020-0115	RCA JACK 2ROW 2I/O (W-R) (NK-1416-20T) L-F	1
33	SS		0302-9020-0180	RCA JACK 2ROW 2I/O (W-R) (WSP-202V2-01H) L-F	
34		P2	0302-9000-0130	COMBINATION JACK RCA(WYR)+S 2ROW 4I/O L-F	1
35	SS		0302-9000-0150	COMBINATION JACK RCA(WYR)+S 2ROW 4I/O L-F	
36		P3	0302-9060-0060	RCA JACK 2ROW 6I/O (G-B-R) (2PJ1523-001111) L-F	1
37	SS		0302-9060-0080	RCA JACK 2ROW 6I/O 90' (G-B-R) (MKC21-100AN) L-F	

ITEM	M/S	LOCATION	PART NO.	DESCRPTION	QTY
38		P4	0302-9040-0012	RCA JACK 2ROW 4I/O 90' (W-R) (2PJ-R22R-C01) L-F	1
39	SS		0302-9040-0013	RCA JACK 2ROW 4I/O 90' (W-R) (MKC21-099AN) L-F	
40		P5	0300-1205-3151	D-SUB FEMALE 90' 15P 3ROW (DV11201-H5R6-4F) L-F	1
41	SS		0300-1205-3152	D-SUB FEMALE 90' 15P 3ROW (DV11201-H2R6-4F) L-F	
42	SS		0300-1208-3150	D-SUB FEMALE 90' 15P 3ROW (1285-15S-004-98F) L-F	
43		P6	0302-0350-0012	PHONE JACK 3.5 φ 5P 90' +SHIELD L-F	1
44	SS		0302-0350-0013	PHONE JACK 3.5 φ 5P 90' + SHIELD (NK-083A-2N) L-F	
45		U13H	1712-0400-1930	HEAT SINK(46*46*20)(GV47L)	1
46		U16	0430-6011-3242	IC REGULATOR AZ7805T-E1 TO-220 3PIN LF	1
47	SS		0430-6011-3210	IC MC7805CTG 3PIN TO-220 LF	
48		U24	0980-0103-3160	MODULE TUNER DTVS205EH201A L-F	1
49		Y1	0280-6000-0212	X'TAL 60MHz 49/US 20PPM 9PF+Pad 60ohm -20~70'C L-F	1

364600820150S MAIN BD ASS'Y VW46L FHDTV10A_AUO SMD

ITEM	M/S	LOCATION	PART NO.	DESCRPTION	QTY
1			364600820150B	MAIN BD ASS'Y VW46L FHDTV10A_AUO SMD BOT	1
2			364600820150T	MAIN BD ASS'Y VW46L FHDTV10A_AUO SMD TOP	1

364700220137A AUDIO BD ASS'Y VO47L FHDTV10A AI

ITEM	M/S	LOCATION	PART NO.	DESCRPTION	QTY
1		C142	0103-1101-1511	E/C VT 100uF 50V 105'C F-T (8*11.5mm)	1
2		C192	0103-1100-1511	E/C VT 10uF 50V 105'C F-T (5*11mm)	1
3		C196	0103-6330-1411	E/C HF 33uF 35V 105'C F-T (5*11mm) L-F	1
4		C200	0103-0229-1511	E/C L-L 2.2uF 50V 105'C F-T 5*11 HW L-F	1
5		C201	0103-0229-1511	E/C L-L 2.2uF 50V 105'C F-T 5*11 HW L-F	1
6		C202	0103-1100-1511	E/C VT 10uF 50V 105'C F-T (5*11mm)	1
7		C203	0103-1100-1511	E/C VT 10uF 50V 105'C F-T (5*11mm)	1
8		C208	0103-0101-1411	E/C L-L 100uF 35V 105'C F-T 8*11.5 HW L-F	1
9		C209	0103-0101-1411	E/C L-L 100uF 35V 105'C F-T 8*11.5 HW L-F	1
10		C220	0123-0474-0632	P/C R82 0.47uF 63V J B L-F	1
11		C221	0123-0474-0632	P/C R82 0.47uF 63V J B L-F	1
12		C229	0103-1101-1511	E/C VT 100uF 50V 105'C F-T (8*11.5mm)	1
13		C231	0103-1101-1511	E/C VT 100uF 50V 105'C F-T (8*11.5mm)	1
14		C237	0103-1101-1511	E/C VT 100uF 50V 105'C F-T (8*11.5mm)	1

364700220137M AUDIO BD ASS'Y VO47L FHDTV10A MI

ITEM	M/S	LOCATION	PART NO.	DESCRPTION	QTY
1		C216	0103-6102-1412	E/C HF 1000uF 35V 105'C (12.5*25mm)	1
2		C222	0103-0471-1512	E/C L-L 470uF 50V 105'C K 10*31.5 HW L-F	1
3		C223	0103-0471-1512	E/C L-L 470uF 50V 105'C K 10*31.5 HW L-F	1
4		C241	0103-6102-1412	E/C HF 1000uF 35V 105'C (12.5*25mm)	1
5		C242	0103-6102-1412	E/C HF 1000uF 35V 105'C (12.5*25mm)	1
6		J1	0451-2000-0466	WAFER 2.0mm 4P 90' DIP KINK (M24264R) L-F	1
7	SS		0451-2003-0463	WAFER 2.00mm 4P 90' KINK (A2001WR2-4P) L-F	
8		J2	0451-2500-0446	WAFER 2.5mm 4P 90' DIP KINK (M241854R) L-F	1
9	SS		0451-2500-0443	WAFER 2.50mm 4P 90' KINK (A2501WR2-4P) L-F	
10		J3	0451-2500-0416	WAFER 2.5mm 4P 180' DIP KINK (M241854) L-F	1
11		U9	0430-6016-3189	IC REGULATOR PQ30RV31J00H 3A DIP 4PIN LF	1
12		U9H	1712-0400-1910	Heatsink(AUDIO) (GV46L)	1
13		U9S	1720-0003-0620	MAC. SCREW-MB M3.0*6.0L,Ni	1

364700220137S AUDIO BD ASS'Y VO47L FHDTV10A SMD

ITEM	M/S	LOCATION	PART NO.	DESCRPTION	QTY
1			364700220137B	AUDIO BD ASS'Y VO47L FHDTV10A SMD BOT	1
2			364700220137T	AUDIO BD ASS'Y VO47L FHDTV10A SMD TOP	1

3850-0012-0395 SAFETY STRAP ASS'Y (VINC)

ITEM	M/S	LOCATION	PART NO.	DESCRPTION	QTY
1			1712-0101-1280	SAFETY STRAP(VM60P HDTV10A)	1
2			1720-8508-2050	MAC. SCREW-SFW, M8.0*20.0L,BLK	1
3			1925-1100-0670	PE BAG (120.0*170.0*0.04t)(No.#6)	1

364600820150B MAIN BD ASS'Y VW46L FHDTV10A_AUO SMD BOT

ITEM	M/S	LOCATION	PART NO.	DESCRPTION	QTY
1		CA1	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
2		CA2	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
3	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
4	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
5		CA6	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
6		CB100	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
7	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
8	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
9		CB109	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
10		CB35	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
11	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
12		CB43	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
13	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
14		CB44	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
15	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
16		CB45	0111-3105-1636	C/M MULTI 1uF 16V Y5V 0603	1
17	SS		0112-3105-1636	C/M Multi. 1.0uF 16V Y5V 0603	
18		CB46	0111-3105-1636	C/M MULTI 1uF 16V Y5V 0603	1
19	SS		0112-3105-1636	C/M Multi. 1.0uF 16V Y5V 0603	
20		CB47	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
21	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
22		CB49	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
23	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
24		CB50	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
25	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
26		CB51	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
27	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
28		CB53	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
29	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
30		CB55	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
31	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
32		CB56	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
33	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
34		CB61	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
35	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
36		CB63	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
37	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	

ITEM	M/S	LOCATION	PART NO.	DESCRPTION	QTY
38		CB64	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
39	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
40		CB65	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
41	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
42		CB66	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
43	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
44		CB67	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
45	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
46		CB75	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
47	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
48		CB76	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
49	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
50		CB77	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
51	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
52		CB78	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
53	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
54		CB79	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
55	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
56		CB80	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
57	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
58		CB81	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
59	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
60		CB83	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
61	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
62		CB84	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
63	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
64		CB89	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
65	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
66		CB90	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
67	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
68		CB99	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
69	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
70		C113	0111-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	1
71	SS		0112-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	
72		C114	0111-3105-1636	C/M MULTI 1uF 16V Y5V 0603	1
73	SS		0112-3105-1636	C/M Multi. 1.0uF 16V Y5V 0603	
74		C117	0111-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	1
75	SS		0112-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	
76		C118	0111-3105-1636	C/M MULTI 1uF 16V Y5V 0603	1
77	SS		0112-3105-1636	C/M Multi. 1.0uF 16V Y5V 0603	

ITEM	M/S	LOCATION	PART NO.	DESCRPTION	QTY
78		C121	0111-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	1
79	SS		0112-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	
80		C124	0111-3105-1636	C/M MULTI 1uF 16V Y5V 0603	1
81	SS		0112-3105-1636	C/M Multi. 1.0uF 16V Y5V 0603	
82		C13	0111-3473-2517	C/M Multi. 0.047uF 25V X7R 0402	1
83	SS		0112-3472-5117	C/M Multi. 4700PF 50V X7R K 0402 L-F	
84		C146	0111-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	1
85	SS		0112-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	
86		C147	0111-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	1
87	SS		0112-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	
88		C148	0111-3105-1636	C/M MULTI 1uF 16V Y5V 0603	1
89	SS		0112-3105-1636	C/M Multi. 1.0uF 16V Y5V 0603	
90		C149	0111-3105-1636	C/M MULTI 1uF 16V Y5V 0603	1
91	SS		0112-3105-1636	C/M Multi. 1.0uF 16V Y5V 0603	
92		C152	0111-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	1
93	SS		0112-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	
94		C17	0111-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	1
95	SS		0112-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	
96		C18	0111-3105-1636	C/M MULTI 1uF 16V Y5V 0603	1
97	SS		0112-3105-1636	C/M Multi. 1.0uF 16V Y5V 0603	
98		C191	0111-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	1
99	SS		0112-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	
100		C192	0111-3105-1636	C/M MULTI 1uF 16V Y5V 0603	1
101	SS		0112-3105-1636	C/M Multi. 1.0uF 16V Y5V 0603	
102		C219	0111-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	1
103	SS		0112-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	
104		C225	0111-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	1
105	SS		0112-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	
106		C23	0111-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	1
107	SS		0112-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	
108		C236	0111-3472-5117	C/M Multi. 4700PF 50V X7R K 0402	1
109	SS		0112-3472-5117	C/M Multi. 4700PF 50V X7R K 0402 L-F	
110		C237	0111-3472-5117	C/M Multi. 4700PF 50V X7R K 0402	1
111	SS		0112-3472-5117	C/M Multi. 4700PF 50V X7R K 0402 L-F	
112		C244	0111-3105-1615	C/M MULTI. 1.0uF 16V X7R 0805	1
113	SS		0112-3105-1615	C/M MULTI 1.0uF 16V X7R 0805	
114		C28	0111-3105-1636	C/M MULTI 1uF 16V Y5V 0603	1
115	SS		0112-3105-1636	C/M Multi. 1.0uF 16V Y5V 0603	
116		C34	0111-3105-1636	C/M MULTI 1uF 16V Y5V 0603	1
117	SS		0112-3105-1636	C/M Multi. 1.0uF 16V Y5V 0603	

ITEM	M/S	LOCATION	PART NO.	DESCRPTION	QTY
118		C35	0111-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	1
119	SS		0112-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	
120		C36	0111-3103-1617	C/M Multi. 0.01uF 16V X7R K 0402	1
121	SS		0112-3103-1617	C/M Multi. 0.01uF 16V X7R K 0402	
122		C37	0111-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	1
123	SS		0112-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	
124		C38	0111-3105-1636	C/M MULTI 1uF 16V Y5V 0603	1
125	SS		0112-3105-1636	C/M Multi. 1.0uF 16V Y5V 0603	
126		C41	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
127	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
128		C42	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
129	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
130		C43	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
131	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
132		C44	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
133	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
134		C45	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
135	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
136		C46	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
137	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
138		C53	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
139	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
140		C54	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
141	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
142		C55	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
143	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
144		C56	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
145	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
146		C57	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
147	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
148		C58	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
149	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
150		C75	0111-3105-1636	C/M MULTI 1uF 16V Y5V 0603	1
151	SS		0112-3105-1636	C/M Multi. 1.0uF 16V Y5V 0603	
152		C76	0111-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	1
153	SS		0112-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	
154		C86	0111-3105-1636	C/M MULTI 1uF 16V Y5V 0603	1
155	SS		0112-3105-1636	C/M Multi. 1.0uF 16V Y5V 0603	
156		C87	0111-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	1
157	SS		0112-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	

ITEM	M/S	LOCATION	PART NO.	DESCRPTION	QTY
158		C95	0111-3105-1636	C/M MULTI 1uF 16V Y5V 0603	1
159	SS		0112-3105-1636	C/M Multi. 1.0uF 16V Y5V 0603	
160		C96	0111-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	1
161	SS		0112-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	
162		D101	0272-0005-0960	ESD PROTECTOR 5V (VPORT 0603 220K V05) L-F	1
163		D112	0111-3104-5166	C/M MULTI 0.1UF 50V X7R J 0603	1
164	SS		0112-3104-5166	C/M Muitl. 0.1uF 50V X7R J 0603	
165		D113	0111-3104-5166	C/M MULTI 0.1UF 50V X7R J 0603	1
166	SS		0112-3104-5166	C/M Muitl. 0.1uF 50V X7R J 0603	
167		D114	0111-3104-5166	C/M MULTI 0.1UF 50V X7R J 0603	1
168	SS		0112-3104-5166	C/M Muitl. 0.1uF 50V X7R J 0603	
169		D119	0400-0681-2715	ZENER 6.46V-7.14V MMSZ5235B-7-F 1/2W SOD-123 L-F	1
170		D121	0400-0311-2715	ZENER 3.14-3.47V MMSZ5226B 1/2W SOD-123 L-F	1
171		D26	0390-5004-2343	GEN. DIODE LL4148WP SMD 1206 L-F	1
172	SS		0390-3006-7353	DIODE FAST 0.3A 100V LL4148 LL-34 LF	
173	SS		0390-5004-2223	GEN. DIODE RLS4148NTE-11 SMD L-F	
174		D27	0272-0005-0962	ESD PROTECTOR 5V (VPORT 0603 100K V05) L-F	1
175		D29	0272-0005-0960	ESD PROTECTOR 5V (VPORT 0603 220K V05) L-F	1
176		D30	0272-0005-0962	ESD PROTECTOR 5V (VPORT 0603 100K V05) L-F	1
177		D31	0272-0005-0960	ESD PROTECTOR 5V (VPORT 0603 220K V05) L-F	1
178		D32	0272-0005-0962	ESD PROTECTOR 5V (VPORT 0603 100K V05) L-F	1
179		D33	0272-0005-0960	ESD PROTECTOR 5V (VPORT 0603 220K V05) L-F	1
180		D34	0272-0005-0960	ESD PROTECTOR 5V (VPORT 0603 220K V05) L-F	1
181		D35	0272-0005-0960	ESD PROTECTOR 5V (VPORT 0603 220K V05) L-F	1
182		D43	0390-6005-0293	Schottky Diode 0.2A 30V BAT54C-7-F SOT-23 L-F	1
183		D44	0390-6005-0293	Schottky Diode 0.2A 30V BAT54C-7-F SOT-23 L-F	1
184		D45	0272-0005-0960	ESD PROTECTOR 5V (VPORT 0603 220K V05) L-F	1
185		D46	0272-0005-0960	ESD PROTECTOR 5V (VPORT 0603 220K V05) L-F	1
186		D47	0272-0005-0960	ESD PROTECTOR 5V (VPORT 0603 220K V05) L-F	1
187		D5	0272-0005-0960	ESD PROTECTOR 5V (VPORT 0603 220K V05) L-F	1
188		D57	0272-0005-0960	ESD PROTECTOR 5V (VPORT 0603 220K V05) L-F	1
189		D58	0111-3104-5166	C/M MULTI 0.1UF 50V X7R J 0603	1
190	SS		0112-3104-5166	C/M Muitl. 0.1uF 50V X7R J 0603	
191		D59	0272-0005-0962	ESD PROTECTOR 5V (VPORT 0603 100K V05) L-F	1
192		D60	0272-0005-0962	ESD PROTECTOR 5V (VPORT 0603 100K V05) L-F	1
193		D61	0272-0005-0960	ESD PROTECTOR 5V (VPORT 0603 220K V05) L-F	1
194		D62	0111-3104-5166	C/M MULTI 0.1UF 50V X7R J 0603	1
195	SS		0112-3104-5166	C/M Muitl. 0.1uF 50V X7R J 0603	
196		D63	0272-0005-0962	ESD PROTECTOR 5V (VPORT 0603 100K V05) L-F	1
197		D64	0272-0005-0962	ESD PROTECTOR 5V (VPORT 0603 100K V05) L-F	1

ITEM	M/S	LOCATION	PART NO.	DESCRPTION	QTY
198		D65	0272-0005-0960	ESD PROTECTOR 5V (VPORT 0603 220K V05) L-F	1
199		D66	0111-3104-5166	C/M MULTI 0.1UF 50V X7R J 0603	1
200	SS		0112-3104-5166	C/M Muitl. 0.1uF 50V X7R J 0603	
201		D67	0272-0005-0962	ESD PROTECTOR 5V (VPORT 0603 100K V05) L-F	1
202		D68	0272-0005-0962	ESD PROTECTOR 5V (VPORT 0603 100K V05) L-F	1
203		L17	0370-0000-6482	CHIP BEAD CORE 80ohm (GB201209D800TT) LF	1
204		L21	0370-0000-6482	CHIP BEAD CORE 80ohm (GB201209D800TT) LF	1
205		L22	0370-0000-6482	CHIP BEAD CORE 80ohm (GB201209D800TT) LF	1
206		L23	0370-0000-6482	CHIP BEAD CORE 80ohm (GB201209D800TT) LF	1
207		L24	0370-0000-6482	CHIP BEAD CORE 80ohm (GB201209D800TT) LF	1
208		L26	0370-0000-6482	CHIP BEAD CORE 80ohm (GB201209D800TT) LF	1
209		L27	0370-0000-6482	CHIP BEAD CORE 80ohm (GB201209D800TT) LF	1
210		L30	0370-0000-6482	CHIP BEAD CORE 80ohm (GB201209D800TT) LF	1
211		L32	0370-0000-6482	CHIP BEAD CORE 80ohm (GB201209D800TT) LF	1
212		L34	0370-0000-6482	CHIP BEAD CORE 80ohm (GB201209D800TT) LF	1
213		L42	0370-0000-6482	CHIP BEAD CORE 80ohm (GB201209D800TT) LF	1
214		L43	0370-0000-6482	CHIP BEAD CORE 80ohm (GB201209D800TT) LF	1
215		L55	0370-0000-6482	CHIP BEAD CORE 80ohm (GB201209D800TT) LF	1
216		Q43	0420-1004-9621	MOSFET N-CH 2N7002E-T1-E3 SMD (SOT-23) L-F	1
217		Q44	0420-1004-9621	MOSFET N-CH 2N7002E-T1-E3 SMD (SOT-23) L-F	1
218		Q45	0420-1004-9621	MOSFET N-CH 2N7002E-T1-E3 SMD (SOT-23) L-F	1
219		Q46	0420-1004-9621	MOSFET N-CH 2N7002E-T1-E3 SMD (SOT-23) L-F	1
220		Q47	0420-1004-9621	MOSFET N-CH 2N7002E-T1-E3 SMD (SOT-23) L-F	1
221		Q48	0420-1004-9621	MOSFET N-CH 2N7002E-T1-E3 SMD (SOT-23) L-F	1
222		Q8	0410-5000-5610	TRANSISTOR MMBT3904LT1G SOT-23 L-F	1
223	SS		0410-5000-5619	TRANSISTOR KN3904S SOT-23 LF	
224	SS		0410-5000-5622	TRANSISTOR MMBT3904 NL SOT-23 L-F	
225		Q9	0410-5000-5610	TRANSISTOR MMBT3904LT1G SOT-23 L-F	1
226	SS		0410-5000-5619	TRANSISTOR KN3904S SOT-23 LF	
227	SS		0410-5000-5622	TRANSISTOR MMBT3904 NL SOT-23 L-F	
228		R103	0131-1008-1614	RES. MF 1ohm 1/16W F 0402	1
229		R149	0130-2002-1654	RES. CF 20Kohm 1/16W J 0402	1
230		R150	0130-2002-1654	RES. CF 20Kohm 1/16W J 0402	1
231		R190	0130-2002-1654	RES. CF 20Kohm 1/16W J 0402	1
232		R192	0130-2002-1654	RES. CF 20Kohm 1/16W J 0402	1
233		R193	0130-2002-1654	RES. CF 20Kohm 1/16W J 0402	1
234		R194	0130-2002-1654	RES. CF 20Kohm 1/16W J 0402	1
235		R216	0130-2002-1654	RES. CF 20Kohm 1/16W J 0402	1
236		R217	0130-2002-1654	RES. CF 20Kohm 1/16W J 0402	1
237		R221	0130-1002-1654	RES. CF 10Kohm 1/16W J 0402	1

ITEM	M/S	LOCATION	PART NO.	DESCRPTION	QTY
238		R223	0130-1002-1654	RES. CF 10Kohm 1/16W J 0402	1
239		R276	0130-1000-1654	RES. CF 100ohm 1/16W J 0402	1
240		R281	0130-1002-1654	RES. CF 10Kohm 1/16W J 0402	1
241		R286	0130-1000-1654	RES. CF 100ohm 1/16W J 0402	1
242		R294	0130-1002-1654	RES. CF 10Kohm 1/16W J 0402	1
243		R302	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
244		R303	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
245		R384	0130-4701-1654	RES. CF 4.7Kohm 1/16W J 0402	1
246		R385	0130-4701-1654	RES. CF 4.7Kohm 1/16W J 0402	1
247		R408	0130-2002-1654	RES. CF 20Kohm 1/16W J 0402	1
248		R409	0130-2002-1654	RES. CF 20Kohm 1/16W J 0402	1
249		R411	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
250		R412	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
251		R416	0130-1002-1654	RES. CF 10Kohm 1/16W J 0402	1
252		R420	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
253		R48	0130-1000-1654	RES. CF 100ohm 1/16W J 0402	1
254		R481	0130-0000-0055	RES. CF 0.0ohm 1/10W J 0603	1
255		R482	0130-0000-0055	RES. CF 0.0ohm 1/10W J 0603	1
256		R487	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
257		R488	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
258		R491	0130-1002-1654	RES. CF 10Kohm 1/16W J 0402	1
259		R492	0130-1002-1654	RES. CF 10Kohm 1/16W J 0402	1
260		R50	0130-1000-1654	RES. CF 100ohm 1/16W J 0402	1
261		R571	0130-4701-1654	RES. CF 4.7Kohm 1/16W J 0402	1
262		R572	0130-4701-1654	RES. CF 4.7Kohm 1/16W J 0402	1
263		R573	0130-4701-1654	RES. CF 4.7Kohm 1/16W J 0402	1
264		R574	0130-4701-1654	RES. CF 4.7Kohm 1/16W J 0402	1
265		R575	0130-4701-1654	RES. CF 4.7Kohm 1/16W J 0402	1
266		R576	0130-4701-1654	RES. CF 4.7Kohm 1/16W J 0402	1
267		R587	0130-1001-1459	RES. CF 1.0Kohm 1/4W J 1206	1
268		R588	0130-2001-1858	RES. CF 2.0Kohm 1/8W J 0805	1
269		R589	0130-2001-1858	RES. CF 2.0Kohm 1/8W J 0805	1
270		R590	0130-4700-1858	RES. CF 470ohm 1/8W J 0805	1
271		R60	0130-1002-1654	RES. CF 10Kohm 1/16W J 0402	1
272		R70	0130-4701-1654	RES. CF 4.7Kohm 1/16W J 0402	1
273		R79	0130-4701-1654	RES. CF 4.7Kohm 1/16W J 0402	1
274		R89	0130-1002-1654	RES. CF 10Kohm 1/16W J 0402	1
275		R91	0130-3309-1654	RES. CF 33ohm 1/16W J 0402	1
276		R92	0130-1002-1654	RES. CF 10Kohm 1/16W J 0402	1
277		R94	0131-5111-1614	RES. MF 5.11Kohm 1/16W F 0402	1

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ITEM	M/S	LOCATION	PART NO.	DESCRPTION	QTY
1			0171-2272-2434	PCB MAIN BD FR4 340*140 (VX32L HDTV20A_MT5381)(1:1)	1
2		CB1	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
3	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
4		CB10	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
5	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
6		CB103	0111-3222-2517	C/M Multi. 2200pF 25V X7R 0402	1
7	SS		0112-3222-2517	C/M Multi. 2200PF 25V X7R 0402 L-F	
8		CB104	0111-3222-2517	C/M Multi. 2200pF 25V X7R 0402	1
9	SS		0112-3222-2517	C/M Multi. 2200PF 25V X7R 0402 L-F	
10		CB11	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
11	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
12		CB12	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
13	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
14		CB13	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
15	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
16		CB14	0111-3105-1615	C/M MULTI. 1.0uF 16V X7R 0805	1
17	SS		0112-3105-1615	C/M MULTI 1.0uF 16V X7R 0805	
18		CB15	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
19	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
20		CB16	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
21	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
22		CB17	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
23	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
24		CB18	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
25	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
26		CB19	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
27	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
28		CB2	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
29	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
30		CB20	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
31	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
32		CB21	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
33	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
34		CB22	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
35	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
36		CB23	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
37	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	

ITEM	M/S	LOCATION	PART NO.	DESCRPTION	QTY
38		CB24	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
39	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
40		CB25	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
41	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
42		CB26	0111-3104-5166	C/M MULTI 0.1UF 50V X7R J 0603	1
43	SS		0112-3104-5166	C/M Muitl. 0.1uF 50V X7R J 0603	
44		CB27	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
45	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
46		CB3	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
47	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
48		CB31	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
49	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
50		CB32	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
51	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
52		CB33	0111-3104-5166	C/M MULTI 0.1UF 50V X7R J 0603	1
53	SS		0112-3104-5166	C/M Muitl. 0.1uF 50V X7R J 0603	
54		CB34	0111-3104-5166	C/M MULTI 0.1UF 50V X7R J 0603	1
55	SS		0112-3104-5166	C/M Muitl. 0.1uF 50V X7R J 0603	
56		CB4	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
57	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
58		CB5	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
59	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
60		CB52	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
61	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
62		CB57	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
63	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
64		CB58	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
65	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
66		CB6	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
67	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
68		CB62	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
69	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
70		CB68	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
71	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
72		CB69	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
73	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
74		CB7	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
75	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
76		CB70	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
77	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	

ITEM	M/S	LOCATION	PART NO.	DESCRPTION	QTY
78		CB71	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
79	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
80		CB72	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
81	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
82		CB73	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
83	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
84		CB74	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
85	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
86		CB8	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
87	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
88		CB82	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
89	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
90		CB88	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
91	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
92		CB9	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
93	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
94		CB91	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
95	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
96		CB92	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
97	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
98		CB93	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
99	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
100		CB94	0111-3103-1617	C/M Multi. 0.01uF 16V X7R K 0402	1
101	SS		0112-3103-1617	C/M Multi. 0.01uF 16V X7R K 0402	
102		CB95	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
103	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
104		CB96	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
105	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
106		CB97	0111-3103-1617	C/M Multi. 0.01uF 16V X7R K 0402	1
107	SS		0112-3103-1617	C/M Multi. 0.01uF 16V X7R K 0402	
108		CB98	0111-3103-1617	C/M Multi. 0.01uF 16V X7R K 0402	1
109	SS		0112-3103-1617	C/M Multi. 0.01uF 16V X7R K 0402	
110		C104	0111-3472-5117	C/M Multi. 4700PF 50V X7R K 0402	1
111	SS		0112-3472-5117	C/M Multi. 4700PF 50V X7R K 0402 L-F	
112		C105	0111-3103-1617	C/M Multi. 0.01uF 16V X7R K 0402	1
113	SS		0112-3103-1617	C/M Multi. 0.01uF 16V X7R K 0402	
114		C106	0111-3102-5117	C/M MULTI 1000PF 50V X7R 0402	1
115	SS		0112-3102-5117	C/M Multi. 1000PF 50V X7R 0402	
116		C108	0111-3103-1617	C/M Multi. 0.01uF 16V X7R K 0402	1
117	SS		0112-3103-1617	C/M Multi. 0.01uF 16V X7R K 0402	

ITEM	M/S	LOCATION	PART NO.	DESCRPTION	QTY
118		C109	0111-3102-5117	C/M MULTI 1000PF 50V X7R 0402	1
119	SS		0112-3102-5117	C/M Multi. 1000PF 50V X7R 0402	
120		C110	0111-3103-1617	C/M Multi. 0.01uF 16V X7R K 0402	1
121	SS		0112-3103-1617	C/M Multi. 0.01uF 16V X7R K 0402	
122		C112	0111-3103-1617	C/M Multi. 0.01uF 16V X7R K 0402	1
123	SS		0112-3103-1617	C/M Multi. 0.01uF 16V X7R K 0402	
124		C116	0111-3103-1617	C/M Multi. 0.01uF 16V X7R K 0402	1
125	SS		0112-3103-1617	C/M Multi. 0.01uF 16V X7R K 0402	
126		C119	0111-3472-5117	C/M Multi. 4700PF 50V X7R K 0402	1
127	SS		0112-3472-5117	C/M Multi. 4700PF 50V X7R K 0402 L-F	
128		C12	0111-3103-1617	C/M Multi. 0.01uF 16V X7R K 0402	1
129	SS		0112-3103-1617	C/M Multi. 0.01uF 16V X7R K 0402	
130		C120	0111-3103-1617	C/M Multi. 0.01uF 16V X7R K 0402	1
131	SS		0112-3103-1617	C/M Multi. 0.01uF 16V X7R K 0402	
132		C122	0111-3102-5117	C/M MULTI 1000PF 50V X7R 0402	1
133	SS		0112-3102-5117	C/M Multi. 1000PF 50V X7R 0402	
134		C125	0111-3103-1617	C/M Multi. 0.01uF 16V X7R K 0402	1
135	SS		0112-3103-1617	C/M Multi. 0.01uF 16V X7R K 0402	
136		C126	0111-3103-1617	C/M Multi. 0.01uF 16V X7R K 0402	1
137	SS		0112-3103-1617	C/M Multi. 0.01uF 16V X7R K 0402	
138		C127	0111-3102-5117	C/M MULTI 1000PF 50V X7R 0402	1
139	SS		0112-3102-5117	C/M Multi. 1000PF 50V X7R 0402	
140		C129	0111-3103-1617	C/M Multi. 0.01uF 16V X7R K 0402	1
141	SS		0112-3103-1617	C/M Multi. 0.01uF 16V X7R K 0402	
142		C131	0111-3103-1617	C/M Multi. 0.01uF 16V X7R K 0402	1
143	SS		0112-3103-1617	C/M Multi. 0.01uF 16V X7R K 0402	
144		C132	0111-3472-5117	C/M Multi. 4700PF 50V X7R K 0402	1
145	SS		0112-3472-5117	C/M Multi. 4700PF 50V X7R K 0402 L-F	
146		C133	0111-3103-1617	C/M Multi. 0.01uF 16V X7R K 0402	1
147	SS		0112-3103-1617	C/M Multi. 0.01uF 16V X7R K 0402	
148		C135	0111-3103-1617	C/M Multi. 0.01uF 16V X7R K 0402	1
149	SS		0112-3103-1617	C/M Multi. 0.01uF 16V X7R K 0402	
150		C136	0111-3103-1617	C/M Multi. 0.01uF 16V X7R K 0402	1
151	SS		0112-3103-1617	C/M Multi. 0.01uF 16V X7R K 0402	
152		C138	0111-3103-1617	C/M Multi. 0.01uF 16V X7R K 0402	1
153	SS		0112-3103-1617	C/M Multi. 0.01uF 16V X7R K 0402	
154		C139	0111-3103-1617	C/M Multi. 0.01uF 16V X7R K 0402	1
155	SS		0112-3103-1617	C/M Multi. 0.01uF 16V X7R K 0402	
156		C14	0111-3103-1617	C/M Multi. 0.01uF 16V X7R K 0402	1
157	SS		0112-3103-1617	C/M Multi. 0.01uF 16V X7R K 0402	

ITEM	M/S	LOCATION	PART NO.	DESCRPTION	QTY
158		C142	0111-3103-1617	C/M Multi. 0.01uF 16V X7R K 0402	1
159	SS		0112-3103-1617	C/M Multi. 0.01uF 16V X7R K 0402	
160		C143	0111-3220-5107	C/M Multi. 22PF 50V NPO J 0402	1
161	SS		0112-3220-5107	C/M Multi. 22PF 50V NPO J 0402	
162		C144	0111-3220-5107	C/M Multi. 22PF 50V NPO J 0402	1
163	SS		0112-3220-5107	C/M Multi. 22PF 50V NPO J 0402	
164		C15	0111-3105-1636	C/M MULTI 1uF 16V Y5V 0603	1
165	SS		0112-3105-1636	C/M Multi. 1.0uF 16V Y5V 0603	
166		C150	0111-3102-5117	C/M MULTI 1000PF 50V X7R 0402	1
167	SS		0112-3102-5117	C/M Multi. 1000PF 50V X7R 0402	
168		C151	0111-3102-5117	C/M MULTI 1000PF 50V X7R 0402	1
169	SS		0112-3102-5117	C/M Multi. 1000PF 50V X7R 0402	
170		C153	0111-3105-1636	C/M MULTI 1uF 16V Y5V 0603	1
171	SS		0112-3105-1636	C/M Multi. 1.0uF 16V Y5V 0603	
172		C154	0111-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	1
173	SS		0112-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	
174		C155	0111-3105-1636	C/M MULTI 1uF 16V Y5V 0603	1
175	SS		0112-3105-1636	C/M Multi. 1.0uF 16V Y5V 0603	
176		C156	0111-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	1
177	SS		0112-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	
178		C157	0111-3105-1636	C/M MULTI 1uF 16V Y5V 0603	1
179	SS		0112-3105-1636	C/M Multi. 1.0uF 16V Y5V 0603	
180		C158	0111-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	1
181	SS		0112-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	
182		C159	0111-3105-1636	C/M MULTI 1uF 16V Y5V 0603	1
183	SS		0112-3105-1636	C/M Multi. 1.0uF 16V Y5V 0603	
184		C16	0111-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	1
185	SS		0112-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	
186		C160	0111-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	1
187	SS		0112-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	
188		C162	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
189	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
190		C164	0111-3105-1636	C/M MULTI 1uF 16V Y5V 0603	1
191	SS		0112-3105-1636	C/M Multi. 1.0uF 16V Y5V 0603	
192		C165	0111-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	1
193	SS		0112-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	
194		C166	0111-3222-2517	C/M Multi. 2200pF 25V X7R 0402	1
195	SS		0112-3222-2517	C/M Multi. 2200PF 25V X7R 0402 L-F	
196		C167	0111-3222-2517	C/M Multi. 2200pF 25V X7R 0402	1
197	SS		0112-3222-2517	C/M Multi. 2200PF 25V X7R 0402 L-F	

ITEM	M/S	LOCATION	PART NO.	DESCRPTION	QTY
198		C168	0111-3222-2517	C/M Multi. 2200pF 25V X7R 0402	1
199	SS		0112-3222-2517	C/M Multi. 2200PF 25V X7R 0402 L-F	
200		C169	0111-3222-2517	C/M Multi. 2200pF 25V X7R 0402	1
201	SS		0112-3222-2517	C/M Multi. 2200PF 25V X7R 0402 L-F	
202		C19	0111-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	1
203	SS		0112-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	
204		C193	0111-3105-1636	C/M MULTI 1uF 16V Y5V 0603	1
205	SS		0112-3105-1636	C/M Multi. 1.0uF 16V Y5V 0603	
206		C194	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
207	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
208		C196	0111-3105-1636	C/M MULTI 1uF 16V Y5V 0603	1
209	SS		0112-3105-1636	C/M Multi. 1.0uF 16V Y5V 0603	
210		C199	0111-3102-5117	C/M MULTI 1000PF 50V X7R 0402	1
211	SS		0112-3102-5117	C/M Multi. 1000PF 50V X7R 0402	
212		C20	0111-3105-1636	C/M MULTI 1uF 16V Y5V 0603	1
213	SS		0112-3105-1636	C/M Multi. 1.0uF 16V Y5V 0603	
214		C200	0111-3102-5117	C/M MULTI 1000PF 50V X7R 0402	1
215	SS		0112-3102-5117	C/M Multi. 1000PF 50V X7R 0402	
216		C206	0111-3103-1617	C/M Multi. 0.01uF 16V X7R K 0402	1
217	SS		0112-3103-1617	C/M Multi. 0.01uF 16V X7R K 0402	
218		C207	0111-3103-1617	C/M Multi. 0.01uF 16V X7R K 0402	1
219	SS		0112-3103-1617	C/M Multi. 0.01uF 16V X7R K 0402	
220		C21	0111-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	1
221	SS		0112-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	
222		C213	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
223	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
224		C214	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
225	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
226		C215	0111-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	1
227	SS		0112-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	
228		C216	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
229	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
230		C217	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
231	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
232		C22	0111-3105-1636	C/M MULTI 1uF 16V Y5V 0603	1
233	SS		0112-3105-1636	C/M Multi. 1.0uF 16V Y5V 0603	
234		C221	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
235	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
236		C222	0111-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	1
237	SS		0112-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	

ITEM	M/S	LOCATION	PART NO.	DESCRPTION	QTY
238		C223	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
239	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
240		C227	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
241	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
242		C229	0112-3475-1655	C/M Multi 4.7uF 16V X5R K 0805 L-F	1
243		C231	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
244	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
245		C232	0111-3105-1636	C/M MULTI 1uF 16V Y5V 0603	1
246	SS		0112-3105-1636	C/M Multi. 1.0uF 16V Y5V 0603	
247		C233	0112-3475-1655	C/M Multi 4.7uF 16V X5R K 0805 L-F	1
248		C235	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
249	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
250		C238	0111-3473-2517	C/M Multi. 0.047uF 25V X7R 0402	1
251	SS		0112-3473-2517	C/M Multi. 0.047uF 25V X7R 0402	
252		C239	0111-3470-5107	C/M Multi. 47pF 50V NPO 0402	1
253	SS		0112-3470-5107	C/M Multi. 47PF 50V NPO J 0402	
254		C240	0111-3473-2517	C/M Multi. 0.047uF 25V X7R 0402	1
255	SS		0112-3473-2517	C/M Multi. 0.047uF 25V X7R 0402	
256		C241	0111-3470-5107	C/M Multi. 47pF 50V NPO 0402	1
257	SS		0112-3470-5107	C/M Multi. 47PF 50V NPO J 0402	
258		C29	0111-3509-5107	C/M Multi. 5PF 50V NPO 0402	1
259	SS		0112-3509-5107	C/M Multi. 5PF 50V COG 0402 L-F	
260		C30	0111-3509-5107	C/M Multi. 5PF 50V NPO 0402	1
261	SS		0112-3509-5107	C/M Multi. 5PF 50V COG 0402 L-F	
262		C31	0111-3102-5117	C/M MULTI 1000PF 50V X7R 0402	1
263	SS		0112-3102-5117	C/M Multi. 1000PF 50V X7R 0402	
264		C32	0111-3105-1636	C/M MULTI 1uF 16V Y5V 0603	1
265	SS		0112-3105-1636	C/M Multi. 1.0uF 16V Y5V 0603	
266		C33	0111-3105-1636	C/M MULTI 1uF 16V Y5V 0603	1
267	SS		0112-3105-1636	C/M Multi. 1.0uF 16V Y5V 0603	
268		C39	0111-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	1
269	SS		0112-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	
270		C4	0111-3105-1615	C/M MULTI. 1.0uF 16V X7R 0805	1
271	SS		0112-3105-1615	C/M MULTI 1.0uF 16V X7R 0805	
272		C40	0111-3105-1636	C/M MULTI 1uF 16V Y5V 0603	1
273	SS		0112-3105-1636	C/M Multi. 1.0uF 16V Y5V 0603	
274		C47	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
275	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
276		C48	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
277	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	

ITEM	M/S	LOCATION	PART NO.	DESCRPTION	QTY
278		C49	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
279	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
280		C50	0111-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	1
281	SS		0112-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	
282		C51	0111-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	1
283	SS		0112-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	
284		C52	0111-3105-1636	C/M MULTI 1uF 16V Y5V 0603	1
285	SS		0112-3105-1636	C/M Multi. 1.0uF 16V Y5V 0603	
286		C59	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
287	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
288		C6	0111-3103-1617	C/M Multi. 0.01uF 16V X7R K 0402	1
289	SS		0112-3103-1617	C/M Multi. 0.01uF 16V X7R K 0402	
290		C60	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
291	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
292		C61	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
293	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
294		C62	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
295	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
296		C63	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
297	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
298		C64	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
299	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
300		C65	0111-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	1
301	SS		0112-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	
302		C66	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
303	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
304		C67	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
305	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
306		C68	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
307	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
308		C69	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
309	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
310		C70	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
311	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
312		C71	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
313	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
314		C72	0111-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	1
315	SS		0112-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	
316		C77	0111-3105-1636	C/M MULTI 1uF 16V Y5V 0603	1
317	SS		0112-3105-1636	C/M Multi. 1.0uF 16V Y5V 0603	

ITEM	M/S	LOCATION	PART NO.	DESCRPTION	QTY
318		C78	0111-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	1
319	SS		0112-3475-1135	C/M MULTI 4.7uF 10V Y5V 0805	
320		C79	0111-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	1
321	SS		0112-3104-1617	C/M Multi. 0.1uF 16V X7R 0402	
322		C80	0111-3473-2517	C/M Multi. 0.047uF 25V X7R 0402	1
323	SS		0112-3473-2517	C/M Multi. 0.047uF 25V X7R 0402	
324		C81	0111-3105-1636	C/M MULTI 1uF 16V Y5V 0603	1
325	SS		0112-3105-1636	C/M Multi. 1.0uF 16V Y5V 0603	
326		C82	0111-3470-5107	C/M Multi. 47pF 50V NPO 0402	1
327	SS		0112-3470-5107	C/M Multi. 47PF 50V NPO J 0402	
328		C83	0111-3473-2517	C/M Multi. 0.047uF 25V X7R 0402	1
329	SS		0112-3473-2517	C/M Multi. 0.047uF 25V X7R 0402	
330		C84	0111-3105-1636	C/M MULTI 1uF 16V Y5V 0603	1
331	SS		0112-3105-1636	C/M Multi. 1.0uF 16V Y5V 0603	
332		C85	0111-3470-5107	C/M Multi. 47pF 50V NPO 0402	1
333	SS		0112-3470-5107	C/M Multi. 47PF 50V NPO J 0402	
334		C89	0111-3102-5117	C/M MULTI 1000PF 50V X7R 0402	1
335	SS		0112-3102-5117	C/M Multi. 1000PF 50V X7R 0402	
336		C93	0111-3102-5117	C/M MULTI 1000PF 50V X7R 0402	1
337	SS		0112-3102-5117	C/M Multi. 1000PF 50V X7R 0402	
338		C97	0111-3470-5107	C/M Multi. 47pF 50V NPO 0402	1
339	SS		0112-3470-5107	C/M Multi. 47PF 50V NPO J 0402	
340		C99	0111-3473-2517	C/M Multi. 0.047uF 25V X7R 0402	1
341	SS		0112-3473-2517	C/M Multi. 0.047uF 25V X7R 0402	
342		D1	0390-5004-2343	GEN. DIODE LL4148WP SMD 1206 L-F	1
343	SS		0390-3006-7353	DIODE FAST 0.3A 100V LL4148 LL-34 LF	
344	SS		0390-5004-2223	GEN. DIODE RLS4148NTE-11 SMD L-F	
345		D120	0400-0681-2715	ZENER 6.46V-7.14V MMSZ5235B-7-F 1/2W SOD-123 L-F	1
346		D17	0272-0005-0962	ESD PROTECTOR 5V (VPORT 0603 100K V05) L-F	1
347		D19	0272-0005-0962	ESD PROTECTOR 5V (VPORT 0603 100K V05) L-F	1
348		D2	0390-6005-5293	SCHOTTKY DIODE 3A 40V B340A-13-F SMA L-F	1
349		D20	0272-0005-0962	ESD PROTECTOR 5V (VPORT 0603 100K V05) L-F	1
350		D22	0272-0005-0962	ESD PROTECTOR 5V (VPORT 0603 100K V05) L-F	1
351		D24	0272-0005-0962	ESD PROTECTOR 5V (VPORT 0603 100K V05) L-F	1
352		D25	0272-0005-0962	ESD PROTECTOR 5V (VPORT 0603 100K V05) L-F	1
353		D28	0390-5004-2343	GEN. DIODE LL4148WP SMD 1206 L-F	1
354	SS		0390-3006-7353	DIODE FAST 0.3A 100V LL4148 LL-34 LF	
355	SS		0390-5004-2223	GEN. DIODE RLS4148NTE-11 SMD L-F	
356		D3	0390-6005-2103	SCHOTTKY DIODE 0.5A/40V MBR0540T1G SOD-123 LF	1
357	SS		0390-6005-2273	SCHOTTKY DIODE 0.5A 40V SS0540 SOD-123 2PIN LF	

ITEM	M/S	LOCATION	PART NO.	DESCRPTION	QTY
358		D36	0272-0005-0960	ESD PROTECTOR 5V (VPORT 0603 220K V05) L-F	1
359		D37	0272-0005-0960	ESD PROTECTOR 5V (VPORT 0603 220K V05) L-F	1
360		D38	0390-5004-2343	GEN. DIODE LL4148WP SMD 1206 L-F	1
361	SS		0390-3006-7353	DIODE FAST 0.3A 100V LL4148 LL-34 LF	
362	SS		0390-5004-2223	GEN. DIODE RLS4148NTE-11 SMD L-F	
363		D39	0390-5004-2343	GEN. DIODE LL4148WP SMD 1206 L-F	1
364	SS		0390-3006-7353	DIODE FAST 0.3A 100V LL4148 LL-34 LF	
365	SS		0390-5004-2223	GEN. DIODE RLS4148NTE-11 SMD L-F	
366		D40	0390-6005-9293	SCHOTTKY DIODE 1A 40V B140-13-F SMA LF	1
367		D42	0390-6005-0293	Schottky Diode 0.2A 30V BAT54C-7-F SOT-23 L-F	1
368		D6	0272-0005-0960	ESD PROTECTOR 5V (VPORT 0603 220K V05) L-F	1
369		D88	0390-5005-1273	SURFACE DIODE 3A 200V ER3D SMC LF	1
370		D89	0390-6006-5293	SCHOTTKY DIODE 3A 40V B340-13-F SMC L-F	1
371		D92	0390-5004-2343	GEN. DIODE LL4148WP SMD 1206 L-F	1
372	SS		0390-3006-7353	DIODE FAST 0.3A 100V LL4148 LL-34 LF	
373	SS		0390-5004-2223	GEN. DIODE RLS4148NTE-11 SMD L-F	
374		D96	0390-5004-2343	GEN. DIODE LL4148WP SMD 1206 L-F	1
375	SS		0390-3006-7353	DIODE FAST 0.3A 100V LL4148 LL-34 LF	
376	SS		0390-5004-2223	GEN. DIODE RLS4148NTE-11 SMD L-F	
377		D97	0390-5004-2343	GEN. DIODE LL4148WP SMD 1206 L-F	1
378	SS		0390-3006-7353	DIODE FAST 0.3A 100V LL4148 LL-34 LF	
379	SS		0390-5004-2223	GEN. DIODE RLS4148NTE-11 SMD L-F	
380		D98	0390-5004-2343	GEN. DIODE LL4148WP SMD 1206 L-F	1
381	SS		0390-3006-7353	DIODE FAST 0.3A 100V LL4148 LL-34 LF	
382	SS		0390-5004-2223	GEN. DIODE RLS4148NTE-11 SMD L-F	
383		D99	0390-5004-2343	GEN. DIODE LL4148WP SMD 1206 L-F	1
384	SS		0390-3006-7353	DIODE FAST 0.3A 100V LL4148 LL-34 LF	
385	SS		0390-5004-2223	GEN. DIODE RLS4148NTE-11 SMD L-F	
386		F1	0185-1302-0073	FUSE 125V/3A SMD (R451003) LF	1
387		F2	0185-1302-0073	FUSE 125V/3A SMD (R451003) LF	1
388		F3	0184-6751-0073	POLYSWITCH 0.75A 6V SMD (1206L075-C) L-F	1
389	SS		0184-6751-0079	POLYSWITCH 0.75A 6V SMD (NANOSMDC075F) L-F	
390		J8	0302-2000-2306	CONN MALE R/A 30P SMD (MS240430G) L-F	1
391		L1	0370-0001-4282	CHIP BEAD 80ohm 6A 0805 (GB201212K800TM) LF	1
392		L10	0370-0000-6482	CHIP BEAD CORE 80ohm (GB201209D800TT) LF	1
393		L11	0370-0000-6482	CHIP BEAD CORE 80ohm (GB201209D800TT) LF	1
394		L12	0370-0000-6482	CHIP BEAD CORE 80ohm (GB201209D800TT) LF	1
395		L13	0130-0000-1858	RES. CF 0.0ohm 1/8W J 0805	1
396		L15	0370-0000-6482	CHIP BEAD CORE 80ohm (GB201209D800TT) LF	1
397		L16	0360-1000-0420	POWER INDUCTOR L:10uH 1.44A 5.8x5.2mm SMD LF	1

ITEM	M/S	LOCATION	PART NO.	DESCRPTION	QTY
398		L18	0370-0001-6102	CHIP INDUCTOR 820nH 180mA 0805(CD-82BJ03101) LF	1
399		L19	0370-0000-6482	CHIP BEAD CORE 80ohm (GB201209D800TT) LF	1
400		L2	0370-0000-6482	CHIP BEAD CORE 80ohm (GB201209D800TT) LF	1
401		L20	0370-0000-6482	CHIP BEAD CORE 80ohm (GB201209D800TT) LF	1
402		L25	0370-0000-6482	CHIP BEAD CORE 80ohm (GB201209D800TT) LF	1
403		L28	0370-0001-4773	CHIP BEAD CORE 80ohm (MCB1608H800GA) LF	1
404		L29	0370-0001-4773	CHIP BEAD CORE 80ohm (MCB1608H800GA) LF	1
405		L3	0130-0000-1858	RES. CF 0.0ohm 1/8W J 0805	1
406		L31	0370-0001-4773	CHIP BEAD CORE 80ohm (MCB1608H800GA) LF	1
407		L33	0370-0001-4773	CHIP BEAD CORE 80ohm (MCB1608H800GA) LF	1
408		L35	0370-0001-4773	CHIP BEAD CORE 80ohm (MCB1608H800GA) LF	1
409		L36	0370-0001-4773	CHIP BEAD CORE 80ohm (MCB1608H800GA) LF	1
410		L37	0370-0001-4773	CHIP BEAD CORE 80ohm (MCB1608H800GA) LF	1
411		L38	0370-0001-4773	CHIP BEAD CORE 80ohm (MCB1608H800GA) LF	1
412		L39	0370-0001-4773	CHIP BEAD CORE 80ohm (MCB1608H800GA) LF	1
413		L40	0370-2022-9620	CHIP COIL 2.2uH 15mA 0603 LF (MLF1608A2R2KT)	1
414		L41	0370-2022-9620	CHIP COIL 2.2uH 15mA 0603 LF (MLF1608A2R2KT)	1
415		L44	0370-0000-6482	CHIP BEAD CORE 80ohm (GB201209D800TT) LF	1
416		L45	0370-0000-6482	CHIP BEAD CORE 80ohm (GB201209D800TT) LF	1
417		L46	0370-0000-6482	CHIP BEAD CORE 80ohm (GB201209D800TT) LF	1
418		L47	0370-0000-6482	CHIP BEAD CORE 80ohm (GB201209D800TT) LF	1
419		L48	0370-0000-6482	CHIP BEAD CORE 80ohm (GB201209D800TT) LF	1
420		L49	0370-0000-6482	CHIP BEAD CORE 80ohm (GB201209D800TT) LF	1
421		L5	0130-0000-1858	RES. CF 0.0ohm 1/8W J 0805	1
422		L56	0370-0000-6482	CHIP BEAD CORE 80ohm (GB201209D800TT) LF	1
423		L58	0370-0000-6482	CHIP BEAD CORE 80ohm (GB201209D800TT) LF	1
424		L63	0370-0000-6482	CHIP BEAD CORE 80ohm (GB201209D800TT) LF	1
425		L64	0370-0000-6482	CHIP BEAD CORE 80ohm (GB201209D800TT) LF	1
426		L66	0370-0000-6482	CHIP BEAD CORE 80ohm (GB201209D800TT) LF	1
427		L67	0370-0000-6482	CHIP BEAD CORE 80ohm (GB201209D800TT) LF	1
428		L7	0370-0001-4282	CHIP BEAD 80ohm 6A 0805 (GB201212K800TM) LF	1
429		L70	0370-0000-6482	CHIP BEAD CORE 80ohm (GB201209D800TT) LF	1
430		L8	0370-0001-4282	CHIP BEAD 80ohm 6A 0805 (GB201212K800TM) LF	1
431		L9	0130-0000-1858	RES. CF 0.0ohm 1/8W J 0805	1
432		P7	0304-1000-0113	CONN HDMI 19P 90' SMD With Flange (392M19-H58) L-F	1
433	SS		0304-1000-0160	CONN. HDMI 19P 90' SMD With Flange (471511062) L-F	
434		P8	0304-1000-0113	CONN HDMI 19P 90' SMD With Flange (392M19-H58) L-F	1
435	SS		0304-1000-0160	CONN. HDMI 19P 90' SMD With Flange (471511062) L-F	
436		P9	0304-1000-0113	CONN HDMI 19P 90' SMD With Flange (392M19-H58) L-F	1
437	SS		0304-1000-0160	CONN. HDMI 19P 90' SMD With Flange (471511062) L-F	

ITEM	M/S	LOCATION	PART NO.	DESCRPTION	QTY
438		Q1	0410-5000-5610	TRANSISTOR MMBT3904LT1G SOT-23 L-F	1
439	SS		0410-5000-5619	TRANSISTOR KN3904S SOT-23 LF	
440	SS		0410-5000-5622	TRANSISTOR MMBT3904 NL SOT-23 L-F	
441		Q11	0410-5000-5610	TRANSISTOR MMBT3904LT1G SOT-23 L-F	1
442	SS		0410-5000-5619	TRANSISTOR KN3904S SOT-23 LF	
443	SS		0410-5000-5622	TRANSISTOR MMBT3904 NL SOT-23 L-F	
444		Q12	0410-5000-5610	TRANSISTOR MMBT3904LT1G SOT-23 L-F	1
445	SS		0410-5000-5619	TRANSISTOR KN3904S SOT-23 LF	
446	SS		0410-5000-5622	TRANSISTOR MMBT3904 NL SOT-23 L-F	
447		Q13	0410-5000-5610	TRANSISTOR MMBT3904LT1G SOT-23 L-F	1
448	SS		0410-5000-5619	TRANSISTOR KN3904S SOT-23 LF	
449	SS		0410-5000-5622	TRANSISTOR MMBT3904 NL SOT-23 L-F	
450		Q16	0410-3001-0612	TRANSISTOR 2SD2653K SMD SMT3 3PIN LF	1
451	SS		0410-3001-0611	TRANSISTOR NPN 2A 20V PBSS4320T SOT-23 3PIN LF	
452		Q18	0410-3001-0612	TRANSISTOR 2SD2653K SMD SMT3 3PIN LF	1
453	SS		0410-3001-0611	TRANSISTOR NPN 2A 20V PBSS4320T SOT-23 3PIN LF	
454		Q19	0410-2004-1614	TRANSISTOR NPN 2SC5706 SMD TP-FA 4PIN LF	1
455	SS		0410-2002-5005	TRANSISTOR 2SC5886 SMD L-F	
456		Q2	0410-5000-5610	TRANSISTOR MMBT3904LT1G SOT-23 L-F	1
457	SS		0410-5000-5619	TRANSISTOR KN3904S SOT-23 LF	
458	SS		0410-5000-5622	TRANSISTOR MMBT3904 NL SOT-23 L-F	
459		Q21	0410-5000-5710	TRANSISTOR MMBT3906LT1G SOT-23 L-F	1
460	SS		0410-5000-5711	TRANSISTOR PMBS3906 SMD LF	
461	SS		0410-5000-5719	TRANSISTOR KN3906S SOT-23 LF	
462		Q22	0410-5000-5710	TRANSISTOR MMBT3906LT1G SOT-23 L-F	1
463	SS		0410-5000-5711	TRANSISTOR PMBS3906 SMD LF	
464	SS		0410-5000-5719	TRANSISTOR KN3906S SOT-23 LF	
465		Q25	0410-5000-5610	TRANSISTOR MMBT3904LT1G SOT-23 L-F	1
466	SS		0410-5000-5619	TRANSISTOR KN3904S SOT-23 LF	
467	SS		0410-5000-5622	TRANSISTOR MMBT3904 NL SOT-23 L-F	
468		Q26	0410-5000-5610	TRANSISTOR MMBT3904LT1G SOT-23 L-F	1
469	SS		0410-5000-5619	TRANSISTOR KN3904S SOT-23 LF	
470	SS		0410-5000-5622	TRANSISTOR MMBT3904 NL SOT-23 L-F	
471		Q27	0410-5000-5710	TRANSISTOR MMBT3906LT1G SOT-23 L-F	1
472	SS		0410-5000-5711	TRANSISTOR PMBS3906 SMD LF	
473	SS		0410-5000-5719	TRANSISTOR KN3906S SOT-23 LF	
474		Q28	0410-5000-5610	TRANSISTOR MMBT3904LT1G SOT-23 L-F	1
475	SS		0410-5000-5619	TRANSISTOR KN3904S SOT-23 LF	
476	SS		0410-5000-5622	TRANSISTOR MMBT3904 NL SOT-23 L-F	
477		Q29	0410-5000-5710	TRANSISTOR MMBT3906LT1G SOT-23 L-F	1

ITEM	M/S	LOCATION	PART NO.	DESCRPTION	QTY
478	SS		0410-5000-5711	TRANSISTOR PMBS3906 SMD LF	
479	SS		0410-5000-5719	TRANSISTOR KN3906S SOT-23 LF	
480		Q3	0410-5000-5610	TRANSISTOR MMBT3904LT1G SOT-23 L-F	1
481	SS		0410-5000-5619	TRANSISTOR KN3904S SOT-23 LF	
482	SS		0410-5000-5622	TRANSISTOR MMBT3904 NL SOT-23 L-F	
483		Q30	0410-5000-5610	TRANSISTOR MMBT3904LT1G SOT-23 L-F	1
484	SS		0410-5000-5619	TRANSISTOR KN3904S SOT-23 LF	
485	SS		0410-5000-5622	TRANSISTOR MMBT3904 NL SOT-23 L-F	
486		Q32	0410-5000-5610	TRANSISTOR MMBT3904LT1G SOT-23 L-F	1
487	SS		0410-5000-5619	TRANSISTOR KN3904S SOT-23 LF	
488	SS		0410-5000-5622	TRANSISTOR MMBT3904 NL SOT-23 L-F	
489		Q4	0410-5000-5610	TRANSISTOR MMBT3904LT1G SOT-23 L-F	1
490	SS		0410-5000-5619	TRANSISTOR KN3904S SOT-23 LF	
491	SS		0410-5000-5622	TRANSISTOR MMBT3904 NL SOT-23 L-F	
492		Q42	0410-5000-5610	TRANSISTOR MMBT3904LT1G SOT-23 L-F	1
493	SS		0410-5000-5619	TRANSISTOR KN3904S SOT-23 LF	
494	SS		0410-5000-5622	TRANSISTOR MMBT3904 NL SOT-23 L-F	
495		Q49	0410-5000-5610	TRANSISTOR MMBT3904LT1G SOT-23 L-F	1
496	SS		0410-5000-5619	TRANSISTOR KN3904S SOT-23 LF	
497	SS		0410-5000-5622	TRANSISTOR MMBT3904 NL SOT-23 L-F	
498		Q5	0410-5000-5610	TRANSISTOR MMBT3904LT1G SOT-23 L-F	1
499	SS		0410-5000-5619	TRANSISTOR KN3904S SOT-23 LF	
500	SS		0410-5000-5622	TRANSISTOR MMBT3904 NL SOT-23 L-F	
501		Q6	0410-5000-5610	TRANSISTOR MMBT3904LT1G SOT-23 L-F	1
502	SS		0410-5000-5619	TRANSISTOR KN3904S SOT-23 LF	
503	SS		0410-5000-5622	TRANSISTOR MMBT3904 NL SOT-23 L-F	
504		Q7	0410-5000-5610	TRANSISTOR MMBT3904LT1G SOT-23 L-F	1
505	SS		0410-5000-5619	TRANSISTOR KN3904S SOT-23 LF	
506	SS		0410-5000-5622	TRANSISTOR MMBT3904 NL SOT-23 L-F	
507		RN1	0141-5109-3851	ARRAY RES. A(X) 51ohm 4R J 8P	1
508		RN2	0141-5109-3851	ARRAY RES. A(X) 51ohm 4R J 8P	1
509		RN3	0141-5109-3851	ARRAY RES. A(X) 51ohm 4R J 8P	1
510		RN4	0141-5109-3851	ARRAY RES. A(X) 51ohm 4R J 8P	1
511		R1	0130-4701-1654	RES. CF 4.7Kohm 1/16W J 0402	1
512		R10	0130-1002-1654	RES. CF 10Kohm 1/16W J 0402	1
513		R100	0130-5109-1654	RES. CF 51ohm 1/16W J 0402	1
514		R102	0130-5109-1654	RES. CF 51ohm 1/16W J 0402	1
515		R104	0130-1000-1654	RES. CF 100ohm 1/16W J 0402	1
516		R107	0130-1000-1654	RES. CF 100ohm 1/16W J 0402	1
517		R108	0130-4709-1654	RES. CF 47ohm 1/16W J 0402	1

ITEM	M/S	LOCATION	PART NO.	DESCRPTION	QTY
518		R109	0130-4709-1654	RES. CF 47ohm 1/16W J 0402	1
519		R11	0130-1002-1654	RES. CF 10Kohm 1/16W J 0402	1
520		R113	0130-4701-1654	RES. CF 4.7Kohm 1/16W J 0402	1
521		R115	0130-4701-1654	RES. CF 4.7Kohm 1/16W J 0402	1
522		R116	0130-4701-1654	RES. CF 4.7Kohm 1/16W J 0402	1
523		R117	0130-1002-1654	RES. CF 10Kohm 1/16W J 0402	1
524		R118	0130-1002-1654	RES. CF 10Kohm 1/16W J 0402	1
525		R119	0130-1002-1654	RES. CF 10Kohm 1/16W J 0402	1
526		R12	0130-1001-1654	RES. CF 1Kohm 1/16W J 0402	1
527		R120	0130-1002-1654	RES. CF 10Kohm 1/16W J 0402	1
528		R121	0130-1002-1654	RES. CF 10Kohm 1/16W J 0402	1
529		R123	0130-1002-1654	RES. CF 10Kohm 1/16W J 0402	1
530		R124	0130-3309-1654	RES. CF 33ohm 1/16W J 0402	1
531		R125	0130-3309-1654	RES. CF 33ohm 1/16W J 0402	1
532		R126	0130-1002-1654	RES. CF 10Kohm 1/16W J 0402	1
533		R127	0130-1002-1654	RES. CF 10Kohm 1/16W J 0402	1
534		R128	0130-1002-1654	RES. CF 10Kohm 1/16W J 0402	1
535		R129	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
536		R130	0130-1000-1654	RES. CF 100ohm 1/16W J 0402	1
537		R131	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
538		R135	0130-2709-1654	RES. CF 27ohm 1/16W J 0402	1
539		R136	0130-1000-1654	RES. CF 100ohm 1/16W J 0402	1
540		R137	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
541		R138	0130-4709-1654	RES. CF 47ohm 1/16W J 0402	1
542		R14	0130-4701-1654	RES. CF 4.7Kohm 1/16W J 0402	1
543		R141	0130-4702-1654	RES. CF 47Kohm 1/16W J 0402	1
544		R144	0130-4702-1654	RES. CF 47Kohm 1/16W J 0402	1
545		R15	0130-1002-1654	RES. CF 10Kohm 1/16W J 0402	1
546		R16	0130-1002-1654	RES. CF 10Kohm 1/16W J 0402	1
547		R165	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
548		R166	0130-6809-1654	RES. CF 68 ohm 1/16W J 0402	1
549		R167	0130-4702-1654	RES. CF 47Kohm 1/16W J 0402	1
550		R168	0130-7509-1654	RES. CF 75ohm 1/16W J 0402	1
551		R169	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
552		R170	0130-1000-1654	RES. CF 100ohm 1/16W J 0402	1
553		R171	0130-4702-1654	RES. CF 47Kohm 1/16W J 0402	1
554		R172	0130-6809-1654	RES. CF 68 ohm 1/16W J 0402	1
555		R173	0130-7509-1654	RES. CF 75ohm 1/16W J 0402	1
556		R174	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
557		R175	0130-1000-1654	RES. CF 100ohm 1/16W J 0402	1

ITEM	M/S	LOCATION	PART NO.	DESCRPTION	QTY
558		R176	0130-7509-1654	RES. CF 75ohm 1/16W J 0402	1
559		R177	0130-6809-1654	RES. CF 68 ohm 1/16W J 0402	1
560		R178	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
561		R179	0130-6809-1654	RES. CF 68 ohm 1/16W J 0402	1
562		R18	0130-5600-1654	RES. CF 560ohm 1/16W J 0402	1
563		R180	0130-4702-1654	RES. CF 47Kohm 1/16W J 0402	1
564		R181	0130-7509-1654	RES. CF 75ohm 1/16W J 0402	1
565		R182	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
566		R183	0130-1000-1654	RES. CF 100ohm 1/16W J 0402	1
567		R184	0130-6809-1654	RES. CF 68 ohm 1/16W J 0402	1
568		R185	0130-4702-1654	RES. CF 47Kohm 1/16W J 0402	1
569		R186	0130-7509-1654	RES. CF 75ohm 1/16W J 0402	1
570		R187	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
571		R188	0130-1000-1654	RES. CF 100ohm 1/16W J 0402	1
572		R189	0130-7509-1654	RES. CF 75ohm 1/16W J 0402	1
573		R19	0130-1002-1654	RES. CF 10Kohm 1/16W J 0402	1
574		R191	0130-6809-1654	RES. CF 68 ohm 1/16W J 0402	1
575		R195	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
576		R196	0130-6809-1654	RES. CF 68 ohm 1/16W J 0402	1
577		R197	0130-7509-1654	RES. CF 75ohm 1/16W J 0402	1
578		R198	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
579		R199	0130-1000-1654	RES. CF 100ohm 1/16W J 0402	1
580		R2	0130-1002-1654	RES. CF 10Kohm 1/16W J 0402	1
581		R20	0130-1001-1654	RES. CF 1Kohm 1/16W J 0402	1
582		R200	0130-6809-1654	RES. CF 68 ohm 1/16W J 0402	1
583		R201	0130-7509-1654	RES. CF 75ohm 1/16W J 0402	1
584		R202	0130-1002-1654	RES. CF 10Kohm 1/16W J 0402	1
585		R203	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
586		R204	0130-1000-1654	RES. CF 100ohm 1/16W J 0402	1
587		R205	0130-1000-1654	RES. CF 100ohm 1/16W J 0402	1
588		R206	0130-6809-1654	RES. CF 68 ohm 1/16W J 0402	1
589		R207	0130-7509-1654	RES. CF 75ohm 1/16W J 0402	1
590		R208	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
591		R209	0130-1000-1654	RES. CF 100ohm 1/16W J 0402	1
592		R21	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
593		R210	0130-1002-1654	RES. CF 10Kohm 1/16W J 0402	1
594		R211	0130-1800-1654	RES. CF 180ohm 1/16W J 0402	1
595		R212	0130-1800-1654	RES. CF 180ohm 1/16W J 0402	1
596		R213	0130-1000-1654	RES. CF 100ohm 1/16W J 0402	1
597		R214	0130-2001-1654	RES CF 2Kohm 1/16W J 0402	1

ITEM	M/S	LOCATION	PART NO.	DESCRPTION	QTY
598		R215	0130-2001-1654	RES CF 2Kohm 1/16W J 0402	1
599		R218	0130-1002-1654	RES. CF 10Kohm 1/16W J 0402	1
600		R22	0130-1002-1654	RES. CF 10Kohm 1/16W J 0402	1
601		R224	0130-4701-1654	RES. CF 4.7Kohm 1/16W J 0402	1
602		R225	0130-4701-1654	RES. CF 4.7Kohm 1/16W J 0402	1
603		R226	0130-4701-1654	RES. CF 4.7Kohm 1/16W J 0402	1
604		R23	0130-1002-1654	RES. CF 10Kohm 1/16W J 0402	1
605		R232	0130-1000-1654	RES. CF 100ohm 1/16W J 0402	1
606		R233	0130-1000-1654	RES. CF 100ohm 1/16W J 0402	1
607		R234	0130-1000-1654	RES. CF 100ohm 1/16W J 0402	1
608		R235	0130-1000-1654	RES. CF 100ohm 1/16W J 0402	1
609		R236	0130-1000-1654	RES. CF 100ohm 1/16W J 0402	1
610		R237	0130-1000-1654	RES. CF 100ohm 1/16W J 0402	1
611		R238	0130-1001-1654	RES. CF 1Kohm 1/16W J 0402	1
612		R239	0130-1001-1654	RES. CF 1Kohm 1/16W J 0402	1
613		R24	0130-1002-1654	RES. CF 10Kohm 1/16W J 0402	1
614		R240	0130-1001-1654	RES. CF 1Kohm 1/16W J 0402	1
615		R244	0130-1003-1654	RES. CF 100Kohm 1/16W J 0402	1
616		R245	0130-1003-1654	RES. CF 100Kohm 1/16W J 0402	1
617		R246	0130-1003-1654	RES. CF 100Kohm 1/16W J 0402	1
618		R247	0130-1001-1654	RES. CF 1Kohm 1/16W J 0402	1
619		R248	0130-1001-1654	RES. CF 1Kohm 1/16W J 0402	1
620		R249	0130-1001-1654	RES. CF 1Kohm 1/16W J 0402	1
621		R25	0131-1100-1614	RES. MF 110ohm 1/16W F 0402	1
622		R259	0130-4702-1654	RES. CF 47Kohm 1/16W J 0402	1
623		R26	0131-1820-1614	RES. MF 182ohm 1/16W F 0402 L-F	1
624		R260	0130-4702-1654	RES. CF 47Kohm 1/16W J 0402	1
625		R261	0130-4702-1654	RES. CF 47Kohm 1/16W J 0402	1
626		R262	0130-4702-1654	RES. CF 47Kohm 1/16W J 0402	1
627		R263	0130-4702-1654	RES. CF 47Kohm 1/16W J 0402	1
628		R264	0130-4702-1654	RES. CF 47Kohm 1/16W J 0402	1
629		R268	0130-4702-1654	RES. CF 47Kohm 1/16W J 0402	1
630		R269	0130-4702-1654	RES. CF 47Kohm 1/16W J 0402	1
631		R27	0131-1100-1614	RES. MF 110ohm 1/16W F 0402	1
632		R270	0130-3309-1654	RES. CF 33ohm 1/16W J 0402	1
633		R28	0131-1820-1614	RES. MF 182ohm 1/16W F 0402 L-F	1
634		R29	0130-1003-1654	RES. CF 100Kohm 1/16W J 0402	1
635		R3	0130-5600-1654	RES. CF 560ohm 1/16W J 0402	1
636		R30	0130-3001-1654	RES. CF 3 Kohm 1/16W J 0402	1
637		R304	0130-1500-1859	RES. CF 150ohm 1/8W J 1206	1

ITEM	M/S	LOCATION	PART NO.	DESCRPTION	QTY
638		R31	0131-7500-1614	RES. MF 750ohm 1/16W F 0402	1
639		R32	0131-2001-1614	RES. MF 2Kohm 1/16W F 0402	1
640		R323	0130-1001-1654	RES. CF 1Kohm 1/16W J 0402	1
641		R324	0130-5101-1654	RES. CF 5.1Kohm 1/16W J 0402	1
642		R325	0130-2001-1654	RES CF 2Kohm 1/16W J 0402	1
643		R329	0130-4701-1654	RES. CF 4.7Kohm 1/16W J 0402	1
644		R33	0131-1100-1614	RES. MF 110ohm 1/16W F 0402	1
645		R337	0130-1003-1654	RES. CF 100Kohm 1/16W J 0402	1
646		R338	0130-1003-1654	RES. CF 100Kohm 1/16W J 0402	1
647		R34	0131-1100-1614	RES. MF 110ohm 1/16W F 0402	1
648		R348	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
649		R349	0130-1001-1654	RES. CF 1Kohm 1/16W J 0402	1
650		R35	0131-1100-1614	RES. MF 110ohm 1/16W F 0402	1
651		R351	0130-0000-1858	RES. CF 0.0ohm 1/8W J 0805	1
652		R353	0130-1002-1654	RES. CF 10Kohm 1/16W J 0402	1
653		R354	0130-4703-1654	RES. CF 470Kohm 1/16W J 0402	1
654		R355	0130-1002-1654	RES. CF 10Kohm 1/16W J 0402	1
655		R356	0130-1002-1654	RES. CF 10Kohm 1/16W J 0402	1
656		R357	0130-4701-1654	RES. CF 4.7Kohm 1/16W J 0402	1
657		R358	0130-4702-1654	RES. CF 47Kohm 1/16W J 0402	1
658		R359	0130-1800-1654	RES. CF 180ohm 1/16W J 0402	1
659		R36	0131-4879-1614	RES. MF 48.7ohm 1/16W F 0402	1
660		R360	0130-3302-1654	RES. CF 33Kohm 1/16W J 0402	1
661		R361	0130-1001-1654	RES. CF 1Kohm 1/16W J 0402	1
662		R363	0130-1000-1654	RES. CF 100ohm 1/16W J 0402	1
663		R364	0130-4701-1654	RES. CF 4.7Kohm 1/16W J 0402	1
664		R365	0130-6802-1654	RES. CF 68Kohm 1/16W J 0402	1
665		R366	0130-1000-1654	RES. CF 100ohm 1/16W J 0402	1
666		R367	0130-1000-1654	RES. CF 100ohm 1/16W J 0402	1
667		R368	0130-4702-1654	RES. CF 47Kohm 1/16W J 0402	1
668		R369	0130-1000-1654	RES. CF 100ohm 1/16W J 0402	1
669		R37	0131-1000-1614	RES. MF 100ohm 1/16W F 0402	1
670		R370	0130-2702-1654	RES. CF 27Kohm 1/16W J 0402	1
671		R371	0130-1001-1654	RES. CF 1Kohm 1/16W J 0402	1
672		R372	0130-4702-1654	RES. CF 47Kohm 1/16W J 0402	1
673		R373	0130-4702-1654	RES. CF 47Kohm 1/16W J 0402	1
674		R376	0130-4709-1654	RES. CF 47ohm 1/16W J 0402	1
675		R378	0130-4701-1654	RES. CF 4.7Kohm 1/16W J 0402	1
676		R38	0131-1100-1614	RES. MF 110ohm 1/16W F 0402	1
677		R381	0130-1002-1654	RES. CF 10Kohm 1/16W J 0402	1

ITEM	M/S	LOCATION	PART NO.	DESCRPTION	QTY
678		R383	0130-1002-1654	RES. CF 10Kohm 1/16W J 0402	1
679		R39	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
680		R4	0130-1002-1654	RES. CF 10Kohm 1/16W J 0402	1
681		R40	0131-1820-1614	RES. MF 182ohm 1/16W F 0402 L-F	1
682		R406	0130-4702-1654	RES. CF 47Kohm 1/16W J 0402	1
683		R407	0130-4702-1654	RES. CF 47Kohm 1/16W J 0402	1
684		R41	0130-4701-1654	RES. CF 4.7Kohm 1/16W J 0402	1
685		R413	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
686		R414	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
687		R415	0130-1002-1654	RES. CF 10Kohm 1/16W J 0402	1
688		R440	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
689		R445	0131-2208-1614	RES. MF 2.2 ohm 1/16W F 0402	1
690		R446	0131-2208-1614	RES. MF 2.2 ohm 1/16W F 0402	1
691		R45	0130-4709-1654	RES. CF 47ohm 1/16W J 0402	1
692		R46	0130-4701-1654	RES. CF 4.7Kohm 1/16W J 0402	1
693		R460	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
694		R463	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
695		R466	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
696		R476	0130-4701-1654	RES. CF 4.7Kohm 1/16W J 0402	1
697		R478	0131-3010-1614	RES. MF 301ohm 1/16W F 0402	1
698		R479	0131-2001-1614	RES. MF 2Kohm 1/16W F 0402	1
699		R480	0130-0000-0055	RES. CF 0.0ohm 1/10W J 0603	1
700		R485	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
701		R486	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
702		R489	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
703		R490	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
704		R493	0130-1002-1654	RES. CF 10Kohm 1/16W J 0402	1
705		R494	0130-1002-1654	RES. CF 10Kohm 1/16W J 0402	1
706		R495	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
707		R497	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
708		R498	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
709		R499	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
710		R5	0130-1002-1654	RES. CF 10Kohm 1/16W J 0402	1
711		R500	0130-1002-1654	RES. CF 10Kohm 1/16W J 0402	1
712		R501	0130-1002-1654	RES. CF 10Kohm 1/16W J 0402	1
713		R502	0130-1002-1654	RES. CF 10Kohm 1/16W J 0402	1
714		R503	0130-1002-1654	RES. CF 10Kohm 1/16W J 0402	1
715		R508	0130-2709-1654	RES. CF 27ohm 1/16W J 0402	1
716		R509	0130-1000-1654	RES. CF 100ohm 1/16W J 0402	1
717		R51	0130-4700-1654	RES. CF 470ohm 1/16W J 0402	1

ITEM	M/S	LOCATION	PART NO.	DESCRPTION	QTY
718		R510	0130-4709-1654	RES. CF 47ohm 1/16W J 0402	1
719		R511	0130-2709-1654	RES. CF 27ohm 1/16W J 0402	1
720		R512	0130-1000-1654	RES. CF 100ohm 1/16W J 0402	1
721		R513	0130-4709-1654	RES. CF 47ohm 1/16W J 0402	1
722		R517	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
723		R518	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
724		R519	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
725		R52	0130-4700-1654	RES. CF 470ohm 1/16W J 0402	1
726		R521	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
727		R524	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
728		R525	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
729		R526	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
730		R527	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
731		R528	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
732		R529	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
733		R53	0130-4700-1654	RES. CF 470ohm 1/16W J 0402	1
734		R530	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
735		R531	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
736		R54	0130-4700-1654	RES. CF 470ohm 1/16W J 0402	1
737		R567	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
738		R568	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
739		R569	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
740		R58	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
741		R583	0130-4701-1654	RES. CF 4.7Kohm 1/16W J 0402	1
742		R584	0130-1002-1654	RES. CF 10Kohm 1/16W J 0402	1
743		R585	0130-1002-1654	RES. CF 10Kohm 1/16W J 0402	1
744		R59	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
745		R6	0130-1002-1654	RES. CF 10Kohm 1/16W J 0402	1
746		R61	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
747		R62	0130-1003-1654	RES. CF 100Kohm 1/16W J 0402	1
748		R63	0130-0000-1654	RES. CF 0ohm 1/16W J 0402	1
749		R64	0130-2203-1654	RES. CF 220Kohm 1/16W J 0402	1
750		R65	0130-1003-1654	RES. CF 100Kohm 1/16W J 0402	1
751		R66	0130-4702-1654	RES. CF 47Kohm 1/16W J 0402	1
752		R68	0131-6341-1614	RES. MF 6.34 Kohm 1/16W F 0402	1
753		R7	0130-4703-1654	RES. CF 470Kohm 1/16W J 0402	1
754		R72	0130-4701-1654	RES. CF 4.7Kohm 1/16W J 0402	1
755		R73	0130-4701-1654	RES. CF 4.7Kohm 1/16W J 0402	1
756		R75	0130-4701-1654	RES. CF 4.7Kohm 1/16W J 0402	1
757		R81	0130-1001-1654	RES. CF 1Kohm 1/16W J 0402	1

ITEM	M/S	LOCATION	PART NO.	DESCRPTION	QTY
758		R86	0130-1002-1654	RES. CF 10Kohm 1/16W J 0402	1
759		R87	0130-1002-1654	RES. CF 10Kohm 1/16W J 0402	1
760		R88	0130-8203-1654	RES. CF 820Kohm 1/16W J 0402	1
761		R90	0130-4701-1654	RES. CF 4.7Kohm 1/16W J 0402	1
762		R95	0130-3309-1654	RES. CF 33ohm 1/16W J 0402	1
763		R96	0130-3309-1654	RES. CF 33ohm 1/16W J 0402	1
764		R97	0130-5109-1654	RES. CF 51ohm 1/16W J 0402	1
765		R98	0130-5109-1654	RES. CF 51ohm 1/16W J 0402	1
766		R99	0130-5109-1654	RES. CF 51ohm 1/16W J 0402	1
767		UA1	0430-7049-0903	IC DDR2 16Mx16 NT5TU16M16AG-3C BGA 84PIN LF	1
768		UA2	0430-7049-0903	IC DDR2 16Mx16 NT5TU16M16AG-3C BGA 84PIN LF	1
769		U10	0272-0095-5900	ESD PROTECTOR 5.5V SMD (IP4280CZ10) L-F	1
770	SS		0272-0085-0980	ESD PROTECTOR 5V SMD (AZ1045-04QU) L-F	
771		U11	0272-0095-5900	ESD PROTECTOR 5.5V SMD (IP4280CZ10) L-F	1
772	SS		0272-0085-0980	ESD PROTECTOR 5V SMD (AZ1045-04QU) L-F	
773		U12	0272-0095-5900	ESD PROTECTOR 5.5V SMD (IP4280CZ10) L-F	1
774	SS		0272-0085-0980	ESD PROTECTOR 5V SMD (AZ1045-04QU) L-F	
775		U13	0430-7049-2999	IC SCALER MT5382AR BGA 465PIN LF	1
776		U14	0420-2004-9629	MOSFET P-CH 5A 30V AP4953GM SO-8 LF	1
777	SS		0420-1005-4601	POWER MOS IRF7316TRPBF SMD 8PIN LF	
778		U15	0430-6006-1079	IC LDO AP1084KLA ADJ TO-263-3L LF	1
779		U17	0430-6018-2028	IC LDO 1A ADJ G1117T63Uf SOT-223 3PIN LF	1
780	SS		0430-6009-1051	IC AMC1117SKF-ADJ SMD 3PIN SOT-223 LF	
781		U18	0430-6015-5079	IC STEP DOWN CONVERTER AP1513SA SOP 8PIN LF	1
782		U19	0430-6006-1079	IC LDO AP1084KLA ADJ TO-263-3L LF	1
783		U20	0430-6006-1079	IC LDO AP1084KLA ADJ TO-263-3L LF	1
784		U21	0430-6018-2028	IC LDO 1A ADJ G1117T63Uf SOT-223 3PIN LF	1
785	SS		0430-6009-1051	IC AMC1117SKF-ADJ SMD 3PIN SOT-223 LF	
786		U22	0430-6018-2028	IC LDO 1A ADJ G1117T63Uf SOT-223 3PIN LF	1
787	SS		0430-6009-1051	IC AMC1117SKF-ADJ SMD 3PIN SOT-223 LF	
788		U23	0430-6010-9028	IC G2996F1Uf 8PIN SOP-8(FD) LF	1
789		U26	0430-6015-8079	IC DC/DC CONVERTER AP1522WA SOT23-5 5PIN LF	1
790		U27	0430-3011-3011	IC EEPROM 16K AT24C16BN-SH-T SOIC 8PIN LF	1
791		U28	0430-3011-7032	IC FLASH 32M S25FL032A0LMFI001 SO-16 LF	1
792	SS		0430-3011-8007	IC FLASH 32M M25P32-VMF6TP SO-16 LF	
793		U31	0430-3010-8011	IC EEPROM AT24C02BN-SH-T SOIC 8PIN LF	1
794		U32	0430-3010-8011	IC EEPROM AT24C02BN-SH-T SOIC 8PIN LF	1
795		U33	0430-3010-8011	IC EEPROM AT24C02BN-SH-T SOIC 8PIN LF	1
796		U34	0430-3010-8011	IC EEPROM AT24C02BN-SH-T SOIC 8PIN LF	1
797		U37	0420-2004-9629	MOSFET P-CH 5A 30V AP4953GM SO-8 LF	1

ITEM	M/S	LOCATION	PART NO.	DESCRPTION	QTY
798	SS		0420-1005-4601	POWER MOS IRF7316TRPBF SMD 8PIN LF	
799		U38	0430-6015-6099	IC RESET STL8110GCL438 4.38V SOT-23 3PIN LF	1
800		U43	0430-7043-5092	IC SWITCH PI5C3257QE QSOP 16PIN LF	1
801		U44	0430-6018-5028	IC LDO 1A ADJ G9117T63U SOT-223 3PIN LF	1
802	SS		0430-6018-0079	IC LDO 1A ADJ AP1117EL-13 SOT223-3L 3PIN LF	
803		U45	0430-7049-8099	IC AUDIO MULTIPLEXER MT8292N QFN 56PIN LF	1
804		U7	0272-0095-5900	ESD PROTECTOR 5.5V SMD (IP4280CZ10) L-F	1
805	SS		0272-0085-0980	ESD PROTECTOR 5V SMD (AZ1045-04QU) L-F	
806		U8	0272-0095-5900	ESD PROTECTOR 5.5V SMD (IP4280CZ10) L-F	1
807	SS		0272-0085-0980	ESD PROTECTOR 5V SMD (AZ1045-04QU) L-F	
808		U9	0272-0095-5900	ESD PROTECTOR 5.5V SMD (IP4280CZ10) L-F	1
809	SS		0272-0085-0980	ESD PROTECTOR 5V SMD (AZ1045-04QU) L-F	
810		ZD1	0400-0851-2012	ZENER RLZ9.1B 8.57~9.01V 1/2W LL-34 LF	1

364700220137B AUDIO BD ASS'Y VO47L FHDTV10A SMD BOT

ITEM	M/S	LOCATION	PART NO.	DESCRPTION	QTY
1		C217	0111-3334-5115	C/M MULTI 0.33uF 50V X7R 0805 L-F	1
2	SS		0112-3334-5115	C/M MULTI 0.33UF 50V X7R 0805	
3		C218	0111-3391-5106	C/M MULTI 390PF 50V NPO 0603	1
4	SS		0112-3391-5106	C/M Multi. 390PF 50V NPO 0603	
5		C219	0111-3391-5106	C/M MULTI 390PF 50V NPO 0603	1
6	SS		0112-3391-5106	C/M Multi. 390PF 50V NPO 0603	
7		C224	0111-3104-5115	C/M MULTI 0.1UF 50V X7R 0805	1
8	SS		0112-3104-5115	C/M MULTI 0.1uF 50V X7R 0805 L-F	
9		C225	0111-3104-5115	C/M MULTI 0.1UF 50V X7R 0805	1
10	SS		0112-3104-5115	C/M MULTI 0.1uF 50V X7R 0805 L-F	
11		C243	0111-3104-5115	C/M MULTI 0.1UF 50V X7R 0805	1
12	SS		0112-3104-5115	C/M MULTI 0.1uF 50V X7R 0805 L-F	
13		C244	0111-3103-5116	C/M MULTI 0.01UF 50V X7R 0603	1
14	SS		0112-3103-5116	C/M Multi. 0.01uF 50V X7R 0603	
15		C245	0111-3103-5116	C/M MULTI 0.01UF 50V X7R 0603	1
16	SS		0112-3103-5116	C/M Multi. 0.01uF 50V X7R 0603	
17		FB2	0370-0001-0752	CHIP BEAD CORE 120ohm (MLB-201209-0120P-N2A)	1
18		FB3	0370-0001-0752	CHIP BEAD CORE 120ohm (MLB-201209-0120P-N2A)	1
19		Q5	0410-5000-5619	TRANSISTOR KN3904S SOT-23 LF	1
20		R210	0130-1203-0055	RES. CF 120Kohm 1/10W J 0603	1
21		R211	0130-1203-0055	RES. CF 120Kohm 1/10W J 0603	1
22		R212	0130-1009-0055	RES. CF 10ohm 1/10W J 0603	1
23		R213	0130-1009-0055	RES. CF 10ohm 1/10W J 0603	1
24		R214	0130-1002-0055	RES. CF 10Kohm 1/10W J 0603	1
25		R215	0130-1002-0055	RES. CF 10Kohm 1/10W J 0603	1
26		R216	0130-0000-1858	RES. CF 0.0ohm 1/8W J 0805	1
27		R217	0130-0000-1858	RES. CF 0.0ohm 1/8W J 0805	1
28		R269	0130-2000-0055	RES. CF 200ohm 1/10W J 0603	1
29		SD2	0390-6006-8293	SCHOTTKY DIODE 2A 40V B240-13-F SMB L-F	1
30		SD3	0390-6006-8293	SCHOTTKY DIODE 2A 40V B240-13-F SMB L-F	1
31		SD4	0390-6006-8293	SCHOTTKY DIODE 2A 40V B240-13-F SMB L-F	1
32		SD5	0390-6006-8293	SCHOTTKY DIODE 2A 40V B240-13-F SMB L-F	1

364700220137T AUDIO BD ASS'Y VO47L FHDTV10A SMD TOP

ITEM	M/S	LOCATION	PART NO.	DESCRPTION	QTY
1			0171-2871-0203	PCB AUDIO BD FR4 100*75 (VO47L FHDTV10A)(1:6)	1
2		C110	0111-3471-5116	C/M MULTI. 470PF 50V X7R 0603	1
3	SS		0112-3471-5116	C/M Multi. 470PF 50V X7R 0603 L-F	
4		C111	0111-3471-5116	C/M MULTI. 470PF 50V X7R 0603	1
5	SS		0112-3471-5116	C/M Multi. 470PF 50V X7R 0603 L-F	
6		C114	0111-3104-5116	C/M MULTI 0.1uF 50V X7R 0603	1
7		C115	0111-3104-5116	C/M MULTI 0.1uF 50V X7R 0603	1
8		C116	0111-3104-5116	C/M MULTI 0.1uF 50V X7R 0603	1
9		C117	0111-3104-5116	C/M MULTI 0.1uF 50V X7R 0603	1
10		C122	0111-3120-5106	C/M Multi. 12PF 50V NPO 0603	1
11	SS		0112-3120-5106	C/M Multi. 12PF 50V NPO 0603	
12		C123	0111-3120-5106	C/M Multi. 12PF 50V NPO 0603	1
13	SS		0112-3120-5106	C/M Multi. 12PF 50V NPO 0603	
14		C126	0111-3471-5116	C/M MULTI. 470PF 50V X7R 0603	1
15	SS		0112-3471-5116	C/M Multi. 470PF 50V X7R 0603 L-F	
16		C127	0111-3471-5116	C/M MULTI. 470PF 50V X7R 0603	1
17	SS		0112-3471-5116	C/M Multi. 470PF 50V X7R 0603 L-F	
18		C140	0111-3105-5135	C/M MULTI 1.0uF 50V Y5V 0805 L-F	1
19	SS		0112-3105-5135	C/M MULTI 1.0uF 50V Y5V 0805	
20		C141	0111-3104-5115	C/M MULTI 0.1UF 50V X7R 0805	1
21	SS		0112-3104-5115	C/M MULTI 0.1uF 50V X7R 0805 L-F	
22		C204	0111-3332-5116	C/M MULTI. 3300PF 50V X7R 0603	1
23	SS		0112-3332-5116	C/M Multi. 3300PF 50V X7R 0603	
24		C205	0111-3272-5116	C/M MULTI 2700PF 50V X7R 0603	1
25	SS		0112-3272-5116	C/M MULTI 2700PF 50V X7R 0603	
26		C210	0111-3105-5135	C/M MULTI 1.0uF 50V Y5V 0805 L-F	1
27	SS		0112-3105-5135	C/M MULTI 1.0uF 50V Y5V 0805	
28		C211	0111-3105-5135	C/M MULTI 1.0uF 50V Y5V 0805 L-F	1
29	SS		0112-3105-5135	C/M MULTI 1.0uF 50V Y5V 0805	
30		C212	0111-3225-1615	C/M MULTI 2.2uF 16V X7R K 0805 L-F	1
31		C213	0111-3225-1615	C/M MULTI 2.2uF 16V X7R K 0805 L-F	1
32		C214	0111-3220-5106	C/M MULTI. 22PF 50V NPO 0603	1
33	SS		0112-3220-5106	C/M Multi. 22PF 50V NPO 0603	
34		C215	0111-3220-5106	C/M MULTI. 22PF 50V NPO 0603	1
35	SS		0112-3220-5106	C/M Multi. 22PF 50V NPO 0603	
36		C228	0111-3104-5115	C/M MULTI 0.1UF 50V X7R 0805	1
37	SS		0112-3104-5115	C/M MULTI 0.1uF 50V X7R 0805 L-F	

ITEM	M/S	LOCATION	PART NO.	DESCRPTION	QTY
38		C230	0111-3104-5115	C/M MULTI 0.1UF 50V X7R 0805	1
39	SS		0112-3104-5115	C/M MULTI 0.1uF 50V X7R 0805 L-F	
40		C236	0111-3104-5115	C/M MULTI 0.1UF 50V X7R 0805	1
41	SS		0112-3104-5115	C/M MULTI 0.1uF 50V X7R 0805 L-F	
42		D10	0390-5004-2343	GEN. DIODE LL4148WP SMD 1206 L-F	1
43	SS		0390-3006-7353	DIODE FAST 0.3A 100V LL4148 LL-34 LF	
44	SS		0390-5004-2223	GEN. DIODE RLS4148NTE-11 SMD L-F	
45		D12	0390-5004-2343	GEN. DIODE LL4148WP SMD 1206 L-F	1
46	SS		0390-3006-7353	DIODE FAST 0.3A 100V LL4148 LL-34 LF	
47	SS		0390-5004-2223	GEN. DIODE RLS4148NTE-11 SMD L-F	
48		D13	0390-5004-2343	GEN. DIODE LL4148WP SMD 1206 L-F	1
49	SS		0390-3006-7353	DIODE FAST 0.3A 100V LL4148 LL-34 LF	
50	SS		0390-5004-2223	GEN. DIODE RLS4148NTE-11 SMD L-F	
51		D2	0390-5004-2343	GEN. DIODE LL4148WP SMD 1206 L-F	1
52	SS		0390-3006-7353	DIODE FAST 0.3A 100V LL4148 LL-34 LF	
53	SS		0390-5004-2223	GEN. DIODE RLS4148NTE-11 SMD L-F	
54		D3	0390-5004-2343	GEN. DIODE LL4148WP SMD 1206 L-F	1
55	SS		0390-3006-7353	DIODE FAST 0.3A 100V LL4148 LL-34 LF	
56	SS		0390-5004-2223	GEN. DIODE RLS4148NTE-11 SMD L-F	
57		L10	0370-0001-4282	CHIP BEAD 80ohm 6A 0805 (GB201212K800TM) LF	1
58		L2	0360-1000-0400	POWER INDUCTOR L:10uH 4.0A 12x12mm SMD LF	1
59	SS		0360-1000-0450	POWER INDUCTOR L:10uH 4.8A 12.5x12.5mm SMD LF	
60		L3	0360-1000-0400	POWER INDUCTOR L:10uH 4.0A 12x12mm SMD LF	1
61	SS		0360-1000-0450	POWER INDUCTOR L:10uH 4.8A 12.5x12.5mm SMD LF	
62		Q1	0411-0000-7612	TR NPN 30mA 50V DTC144EKA-T146 SMT3 LF	1
63		Q3	0410-5000-5710	TRANSISTOR MMBT3906LT1G SOT-23 L-F	1
64	SS		0410-5000-5711	TRANSISTOR PMBS3906 SMD LF	
65	SS		0410-5000-5719	TRANSISTOR KN3906S SOT-23 LF	
66		Q4	0420-1004-9621	MOSFET N-CH 2N7002E-T1-E3 SMD (SOT-23) L-F	1
67	SS		0420-1004-9610	MOSFET N-CH 2N7002LT1G 60V 115mA SMD (SOT-23) LF	
68	SS		0420-1004-9611	MOSFET N-CH 2N7002 SMD (SOT-23) LF	
69		R108	0130-1101-0055	RES. CF 1.1Kohm 1/10W J 0603	1
70		R109	0130-1101-0055	RES. CF 1.1Kohm 1/10W J 0603	1
71		R118	0131-6802-0015	RES. MF 68Kohm 1/10W F 0603	1
72		R119	0131-6802-0015	RES. MF 68Kohm 1/10W F 0603	1
73		R122	0131-6802-0015	RES. MF 68Kohm 1/10W F 0603	1
74		R123	0131-6802-0015	RES. MF 68Kohm 1/10W F 0603	1
75		R124	0131-6802-0015	RES. MF 68Kohm 1/10W F 0603	1
76		R125	0131-6802-0015	RES. MF 68Kohm 1/10W F 0603	1
77		R126	0130-1002-0055	RES. CF 10Kohm 1/10W J 0603	1

ITEM	M/S	LOCATION	PART NO.	DESCRPTION	QTY
78		R127	0130-1002-0055	RES. CF 10Kohm 1/10W J 0603	1
79		R128	0130-2002-0055	RES. CF 20Kohm 1/10W J 0603	1
80		R129	0130-2002-0055	RES. CF 20Kohm 1/10W J 0603	1
81		R130	0130-1002-0055	RES. CF 10Kohm 1/10W J 0603	1
82		R131	0130-1002-0055	RES. CF 10Kohm 1/10W J 0603	1
83		R132	0130-1500-0055	RES. CF 150ohm 1/10W J 0603	1
84		R133	0130-1500-0055	RES. CF 150ohm 1/10W J 0603	1
85		R140	0130-2203-0055	RES. CF 220Kohm 1/10W J 0603	1
86		R141	0130-2203-0055	RES. CF 220Kohm 1/10W J 0603	1
87		R142	0130-4709-0055	RES. CF 47ohm 1/10W J 0603	1
88		R143	0130-0000-1858	RES. CF 0.0ohm 1/8W J 0805	1
89		R200	0130-1002-0055	RES. CF 10Kohm 1/10W J 0603	1
90		R201	0130-1002-0055	RES. CF 10Kohm 1/10W J 0603	1
91		R202	0130-1003-0055	RES. CF 100Kohm 1/10W J 0603	1
92		R203	0130-1003-0055	RES. CF 100Kohm 1/10W J 0603	1
93		R204	0130-1003-0055	RES. CF 100Kohm 1/10W J 0603	1
94		R205	0130-1003-0055	RES. CF 100Kohm 1/10W J 0603	1
95		R206	0130-1002-0055	RES. CF 10Kohm 1/10W J 0603	1
96		R207	0130-1002-0055	RES. CF 10Kohm 1/10W J 0603	1
97		R208	0130-5601-0055	RES. CF 5.6Kohm 1/10W J 0603	1
98		R209	0130-5601-0055	RES. CF 5.6Kohm 1/10W J 0603	1
99		R220	0130-1003-0055	RES. CF 100Kohm 1/10W J 0603	1
100		R221	0130-2002-0055	RES. CF 20Kohm 1/10W J 0603	1
101		R223	0130-3002-0055	RES. CF 30Kohm 1/10W J 0603	1
102		R224	0130-2203-0055	RES. CF 220Kohm 1/10W J 0603	1
103		R225	0130-2209-0055	RES. CF 22ohm 1/10W J 0603	1
104		R226	0130-2203-0055	RES. CF 220Kohm 1/10W J 0603	1
105		R227	0131-4990-0015	RES. MF 499ohm 1/10W F 0603	1
106		R228	0131-8251-0015	RES. MF 8.25Kohm 1/10W F 0603	1
107		R232	0130-0000-0055	RES. CF 0.0ohm 1/10W J 0603	1
108		R233	0130-0000-0055	RES. CF 0.0ohm 1/10W J 0603	1
109		R234	0130-0000-0055	RES. CF 0.0ohm 1/10W J 0603	1
110		R235	0130-0000-0055	RES. CF 0.0ohm 1/10W J 0603	1
111		R236	0130-0000-0055	RES. CF 0.0ohm 1/10W J 0603	1
112		R237	0130-0000-0055	RES. CF 0.0ohm 1/10W J 0603	1
113		R238	0130-0000-0055	RES. CF 0.0ohm 1/10W J 0603	1
114		R239	0130-0000-0055	RES. CF 0.0ohm 1/10W J 0603	1
115		R270	0130-0000-0055	RES. CF 0.0ohm 1/10W J 0603	1
116		R271	0130-0000-0055	RES. CF 0.0ohm 1/10W J 0603	1
117		R272	0130-1003-0055	RES. CF 100Kohm 1/10W J 0603	1

ITEM	M/S	LOCATION	PART NO.	DESCRPTION	QTY
118		R274	0130-1003-0055	RES. CF 100Kohm 1/10W J 0603	1
119		SD10	0390-6004-9293	Schottky Diode 1A 40V B140B-13-F SMB L-F	1
120		U2	0430-1008-6088	IC NJM4558M-TE2_PB SO8(DMP8) L-F	1
121		U3	0430-1008-6088	IC NJM4558M-TE2_PB SO8(DMP8) L-F	1
122		U6	0430-1008-6088	IC NJM4558M-TE2_PB SO8(DMP8) L-F	1
123		U7	0430-7043-4620	IC 2*20W AUDIO AMP MP7722DF-LF-Z 20PIN TSSOP LF	1
124		ZD2	0400-0681-2713	ZENER 6.46V-7.14V MMSZ5235B 1/2W SOD-123 L-F	1
125		ZD3	0400-0681-2713	ZENER 6.46V-7.14V MMSZ5235B 1/2W SOD-123 L-F	1

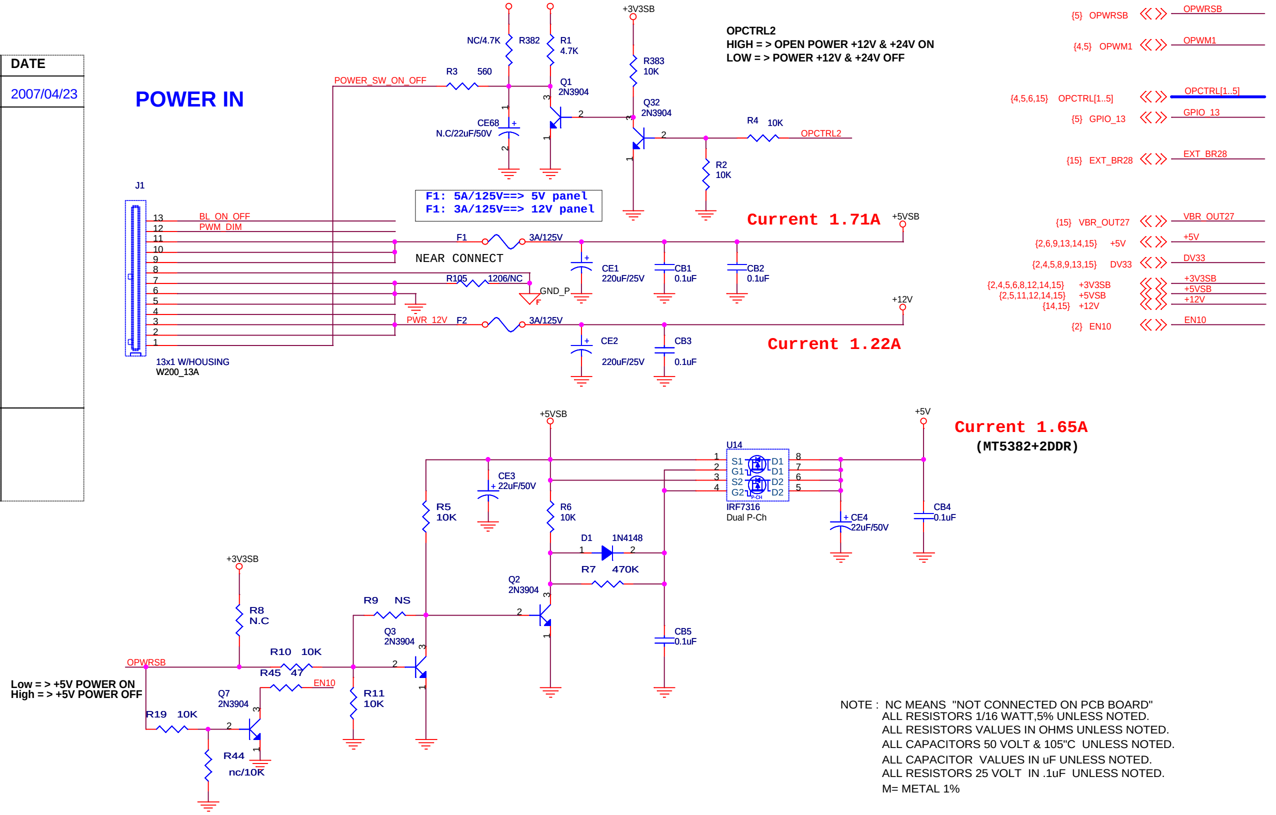
MT5382 (PBGA) FOR VW46LF HDTV10A SCHEMATIC- 4 LAYERS

Rev	History	P#	DATE
RA-V1	INITIAL VERSION		2007/04/23

01. INDEX_POWER
02. POWER
03. TUNER
04. MT5382 BYPASS/TRAP
05. MT5382 PERIPHERAL
06. ANALOG PLL / USB2.0
07. DDR2 MEMORY
08. FLASH/JTAG/UART
09. AV / SV INPUT
10. YPBPR INPUT
11. VGA INPUT
12. HDMI INPUT
13. AUDIO CODEC
14. AUDIO AMP. - SPEAKER
15. LVDS / KEY & IR & BlACKLIGHT

NAME	TYPE	DEVICE
+12V	POWER +12V	POWER SUPPLY
+5V	POWER +5V	POWER SUPPLY
+5VSB	POWER +5V	STANDBY POWER
+3V3SB	POWER +3.3V	STANDBY POWER
+5V_TUENR	POWER +5V	TUNER POWER
+30V_TUNER	POWER +30V	TUNER POWER
DV33	POWER +3.3V	MT5381 POWER AND ITS PERIPHERAL
AV33	POWER +3.3V	MT5381 ANALOG POWER
DDRV	POWER +1.8V	MT5381 DDR POWER
AV25	POWER +2.5V	MT5381 VIDEO FRONT-END POWER
DV10	POWER +1.0V	MT5381 POWER
AV12	POWER +1.2V	MT5381 ANALOG POWER
GND	GROUND	GROUND

POWER IN

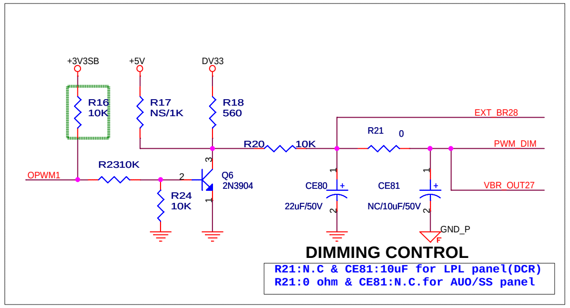


OPCTRL2
HIGH = > OPEN POWER +12V & +24V ON
LOW = > POWER +12V & +24V OFF

F1: 5A/125V==> 5V panel
F1: 3A/125V==> 12V panel

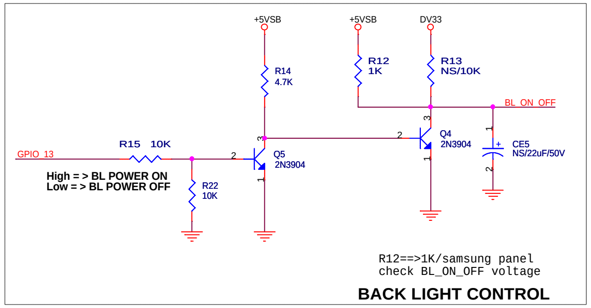
Low = > +5V POWER ON
High = > +5V POWER OFF

NOTE : NC MEANS "NOT CONNECTED ON PCB BOARD"
ALL RESISTORS 1/16 WATT,5% UNLESS NOTED.
ALL RESISTORS VALUES IN OHMS UNLESS NOTED.
ALL CAPACITORS 50 VOLT & 105'C UNLESS NOTED.
ALL CAPACITOR VALUES IN uF UNLESS NOTED.
ALL RESISTORS 25 VOLT IN .1uF UNLESS NOTED.
M= METAL 1%



DIMMING CONTROL

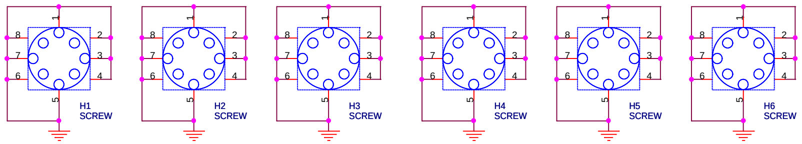
R21:N.C & CE81:10uF for LPL panel(DCR)
R21:0 ohm & CE81:N.C.for AUO/SS panel



High = > BL POWER ON
Low = > BL POWER OFF

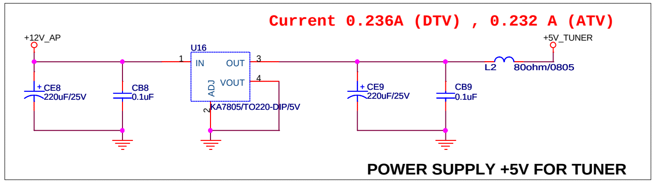
R12==>1K/samsung panel
check BL_ON_OFF voltage

BACK LIGHT CONTROL



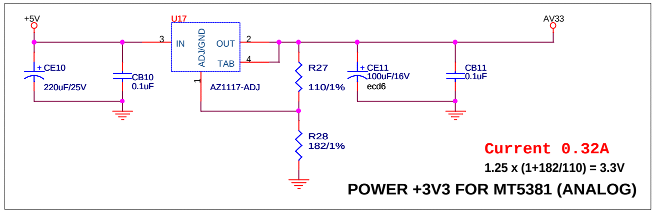
APPROVED BY:	**AmTRAN** TECHNOLOGY			
	MODEL	VW46L FHDTV10A (3646-0082-0150) AUO		
CHECKED BY:	CIRCUITY	POWER		
	PCB P/ N:	0171-2272-2434	ECN NO:	VPCN07110004
DESING BY:	SCH FILE :	364600820150_VPCN07110004.DSN	SCH REV:	04
	PCB FILE :	017122722434.BRD	PCB REV:	04
	DATE:	Friday, November 23, 2007	Sheet:	1 of 15

Analog power



Current 0.236A (DTV) , 0.232 A (ATV)

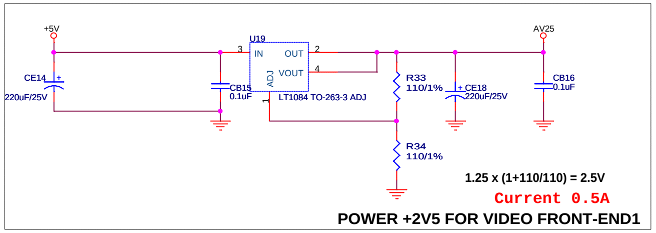
POWER SUPPLY +5V FOR TUNER



Current 0.32A

1.25 x (1+182/110) = 3.3V

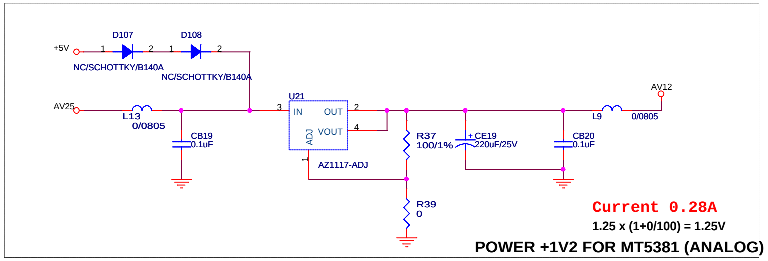
POWER +3V3 FOR MT5381 (ANALOG)



1.25 x (1+110/110) = 2.5V

Current 0.5A

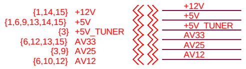
POWER +2V5 FOR VIDEO FRONT-END1



Current 0.28A

1.25 x (1+0/100) = 1.25V

POWER +1V2 FOR MT5381 (ANALOG)



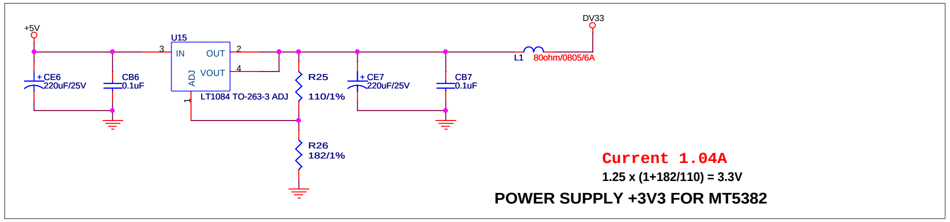
```
DV10: DTV=>1.02A, ATV=>0.70A, HDMI=>0.74A, YPbPr=>0.70A, VGA=>0.71A, SV=>0.71A, AV=>0.71A, max=>1.02A
DDRV: DTV=>0.59A, ATV=>0.31A, HDMI=>0.34A, YPbPr=>0.30A, VGA=>0.26A, SV=>0.30A, AV=>0.34A, max=>0.59A
DV33: DTV=>0.02A, ATV=>0.02A, HDMI=>0.01A, YPbPr=>0.02A, VGA=>0.02A, SV=>0.02A, AV=>0.02A, max=>0.02A
AV33: DTV=>0.17A, ATV=>0.17A, HDMI=>0.19A, YPbPr=>0.17A, VGA=>0.17A, SV=>0.17A, AV=>0.17A, max=>0.19A
AV25: DTV=>0.15A, ATV=>0.16A, HDMI=>0.16A, YPbPr=>0.16A, VGA=>0.16A, SV=>0.16A, AV=>0.16A, max=>0.16A

AVDD12_PLL, AVDD12_USB, AVDD12_CVCC:
      DTV=>0.11A, ATV=>0.11A, HDMI=>0.13A, YPbPr=>0.11A, VGA=>0.12A, SV=>0.11A, AV=>0.10A, max=>0.13A

DVDD12_PLL, DVDD12_USB, DVDD12_CVCC:
      DTV=>0.23A, ATV=>0.23A, HDMI=>0.23A, YPbPr=>0.23A, VGA=>0.23A, SV=>0.23A, AV=>0.23A, max=>0.23A

+3V3SB: DTV=>0.05A, ATV=>0.05A, HDMI=>0.05A, YPbPr=>0.05A, VGA=>0.05A, SV=>0.05A, AV=>0.05A, max=>0.05A
        StandBy=>0.04A
```

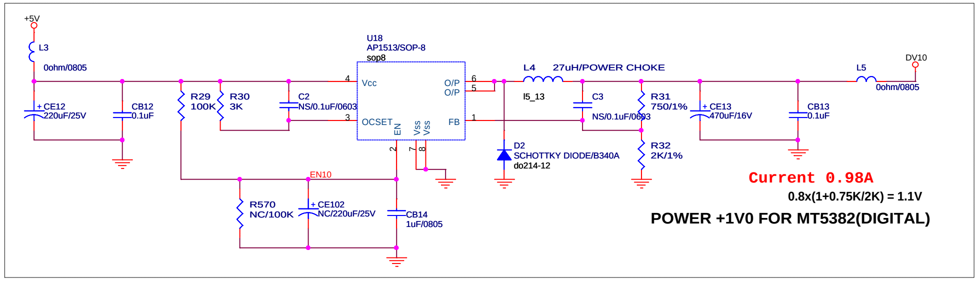
Digital power



Current 1.04A

1.25 x (1+182/110) = 3.3V

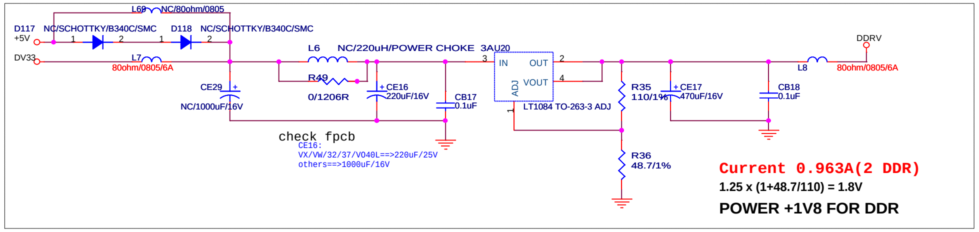
POWER SUPPLY +3V3 FOR MT5382



Current 0.98A

0.8x(1+0.75K/2K) = 1.1V

POWER +1V0 FOR MT5382(DIGITAL)

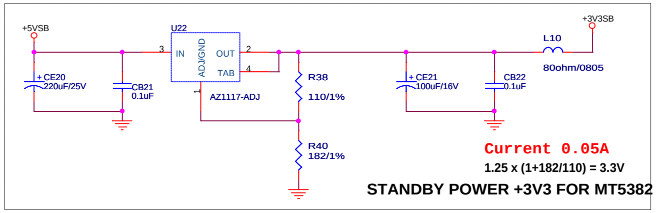


check fpcb
CE16:
VX/VW/32/37/V040L==>220uF/25V
others==>1000uF/16V

Current 0.963A(2 DDR)

1.25 x (1+48.7/110) = 1.8V

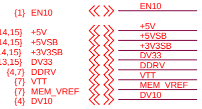
POWER +1V8 FOR DDR



Current 0.05A

1.25 x (1+182/110) = 3.3V

STANDBY POWER +3V3 FOR MT5382



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ALL CAPACITORS 50 VOLT & 105"C UNLESS NOTED.
ALL CAPACITOR VALUES IN uF UNLESS NOTED.
ALL RESISTORS 25 VOLT IN .1uF UNLESS NOTED.
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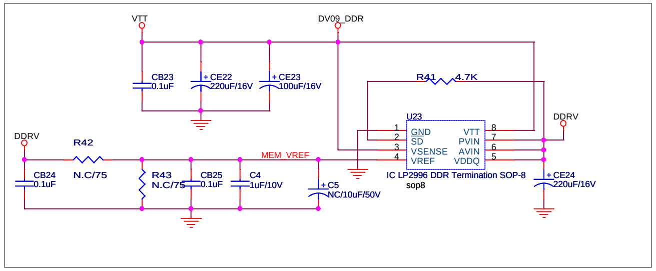
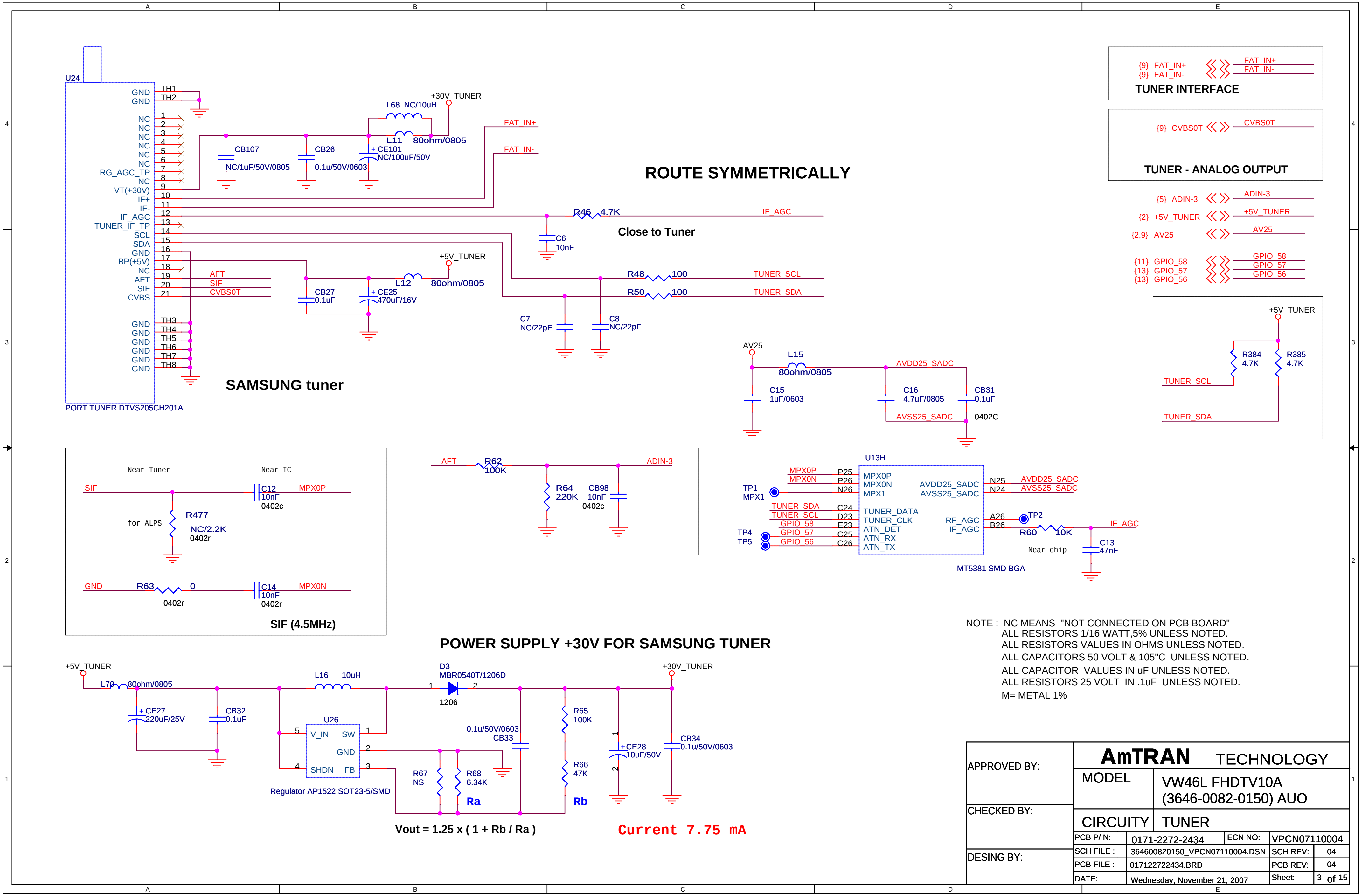


APPROVED BY:	**AmTRAN** TECHNOLOGY			
	MODEL	VW46L FHDTV10A (3646-0082-0150) AUO		
CHECKED BY:	CIRCUITY	SYSTEM LCD POWER		
	PCB P/ N:	0171-2272-2434	ECN NO:	VPCN07110004
DESING BY:	SCH FILE :	364600820150_VPCN07110004.DSN	SCH REV:	04
	PCB FILE :	017122722434.BRD	PCB REV:	04
	DATE:	Wednesday, November 21, 2007	Sheet:	2 of 15



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ALL CAPACITOR VALUES IN uF UNLESS NOTED.
ALL RESISTORS 25 VOLT IN .1uF UNLESS NOTED.
M= METAL 1%

APPROVED BY:	**AmTRAN** TECHNOLOGY		
	MODEL	VW46L FHDTV10A (3646-0082-0150) AUO	
CHECKED BY:	CIRCUITY	TUNER	
	PCB P/ N: 0171-2272-2434	ECN NO:	VPCN07110004
DESING BY:	SCH FILE : 364600820150_VPCN07110004.DSN	SCH REV:	04
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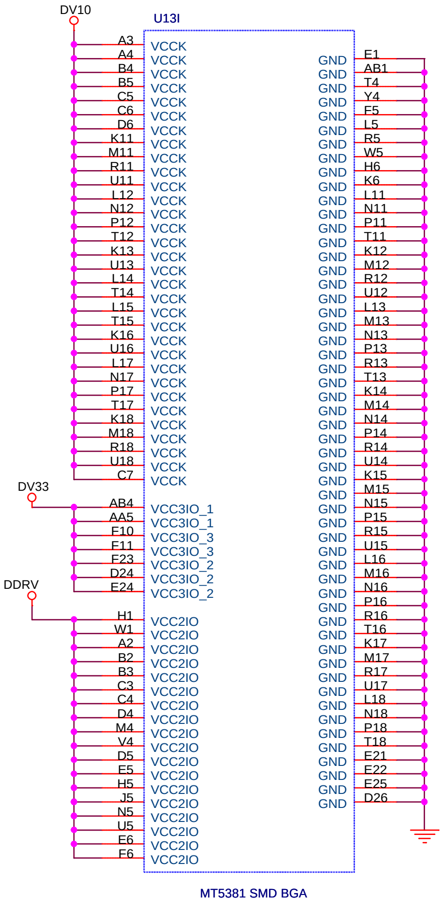
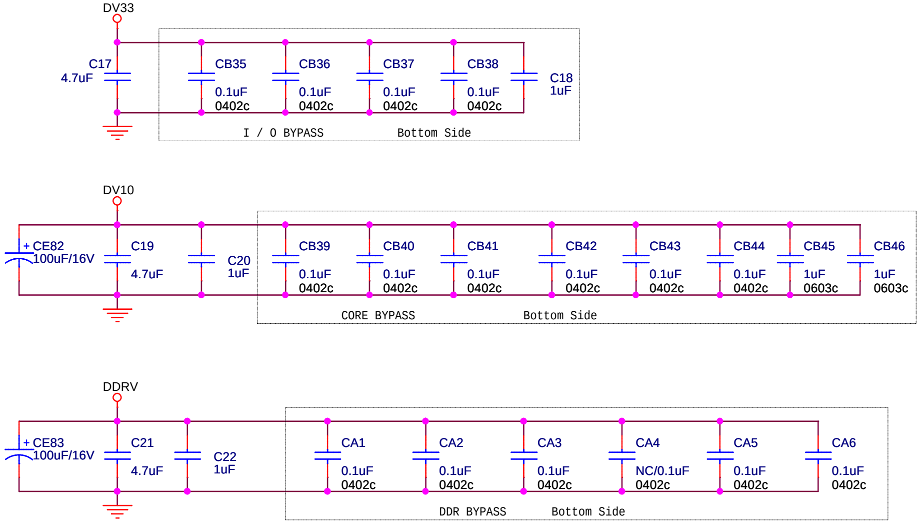
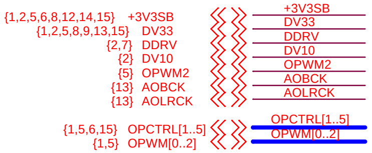
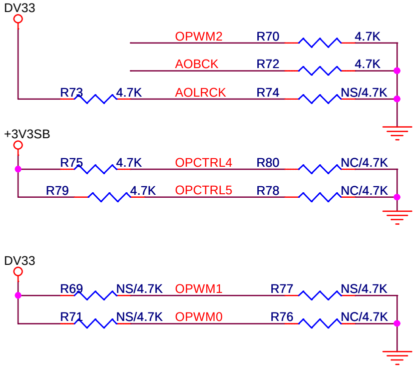
	DATE: Wednesday, November 21, 2007	Sheet:	3 of 15







MT538X Trap



For MT5382P trap

Trap Mode	AOLRCK
Normal mode	0
ICE mode	1

detect power of ADIN0
AC on==>Trap Mode
power on==>F/W

Trap Mode for AC mode	OPCTRL4	OPCTRL5
detect 1V	0	0
detect 2.5V	0	1
detect 3.3V	1	0
Core Reset 1 us	1	1

Trap Mode	OPWM0	OPWM1
SPI BOOT	X	X
NAND BOOT	0	1
LARGE NAND BOOT	1	0

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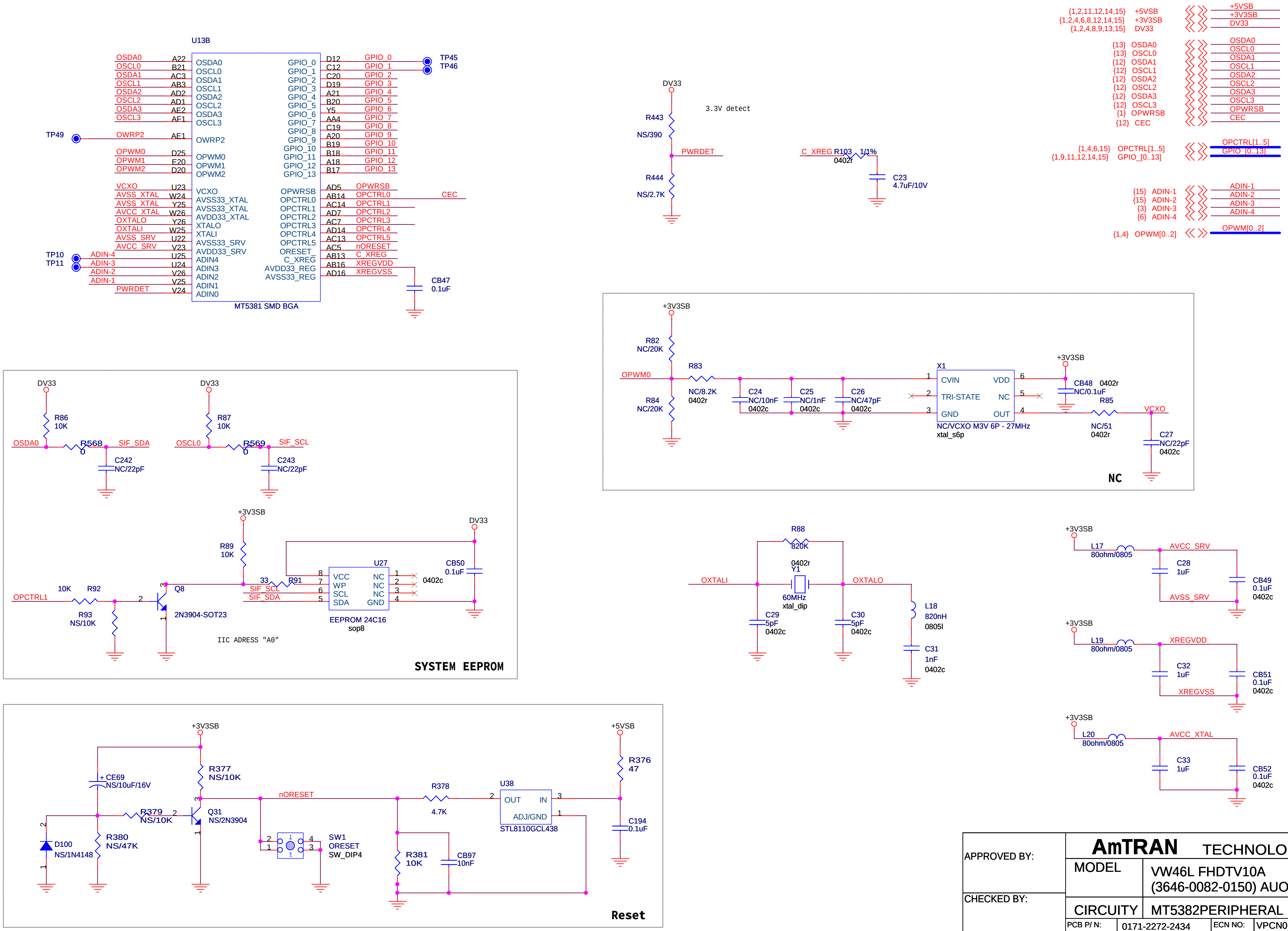
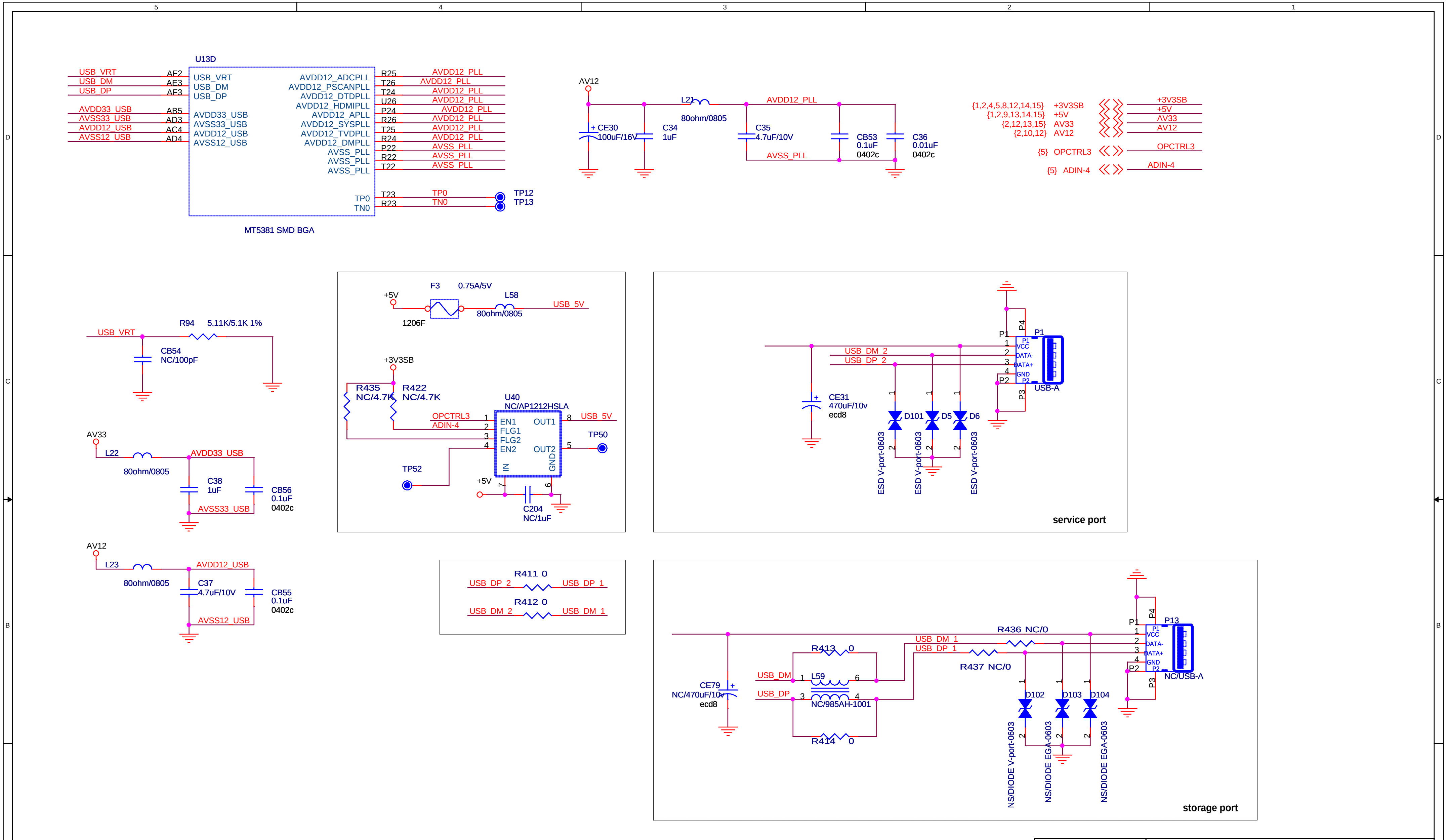
ALL CAPACITOR VALUES IN uF UNLESS NOTED.
ALL RESISTORS 25 VOLT IN .1uF UNLESS NOTED.
M= METAL 1%

APPROVED BY:	**AmTRAN** TECHNOLOGY				
	MODEL	VW46L FHDTV10A (3646-0082-0150) AUO			
CHECKED BY:	CIRCUITY	BYPASS/TRAP			
	PCB P/ N:	0171-2272-2434	ECN NO:	VPCN07110004	
	SCH FILE :	364600820150_VPCN07110004.DSN	SCH REV:	04	
DESING BY:	PCB FILE :	017122722434.BRD	PCB REV:	04	
	DATE:	Wednesday, November 21, 2007	Sheet:	4	of 15


U13B
MT5381 SMD BGA
OSDA0 A22, OSCL0 B21, OSDA1 AC3, OSCL1 AB3, OSDA2 AD2, OSCL2 AD1, OSDA3 AE2, OSCL3 AF1
TP49 OWRP2 AE1
OPWM0 D25, OPWM1 E20, OPWM2 D20
VCXO U23, AVSS33_XTAL W24, AVSS33_XTAL Y25, AVDD33_XTAL W26, XTALO Y26, XTALI W25, AVSS33_SRV U22, AVDD33_SRV V23
TP10 TP11 ADIN4 U25, ADIN3 U24, ADIN2 V26, ADIN1 V25, ADIN0 V24 PWRDET
GPIO_0 D12 … GPIO_13 B17
TP45 TP46
OPWRSB AD5, OPCTRL0 AB14, OPCTRL1 AC14, OPCTRL2 AD7, OPCTRL3 AC7, OPCTRL4 AD14, OPCTRL5 AC13, ORESET_ AC5 nORESET, C_XREG AB13, AVDD33_REG AB16 XREGVDD, AVSS33_REG AD16 XREGVSS
CEC
CB47 0.1uF
DV33
3.3V detect
R443 NS/390
PWRDET
R444 NS/2.7K
C_XREG R103 1/1% 0402r
C23 4.7uF/10V
{1,2,11,12,14,15} +5VSB
{1,2,4,6,8,12,14,15} +3V3SB
{1,2,4,8,9,13,15} DV33
{13} OSDA0
{13} OSCL0
{12} OSDA1
{12} OSCL1
{12} OSDA2
{12} OSCL2
{12} OSDA3
{12} OSCL3
{1} OPWRSB
{12} CEC
{1,4,6,15} OPCTRL[1..5]
{1,9,11,12,14,15} GPIO_[0..13]
{15} ADIN-1
{15} ADIN-2
{3} ADIN-3
{6} ADIN-4
{1,4} OPWM[0..2]
+3V3SB
R82 NC/20K
R83 NC/8.2K 0402r
OPWM0
R84 NC/20K
C24 NC/10nF 0402c
C25 NC/1nF 0402c
C26 NC/47pF 0402c
X1 CVIN VDD TRI-STATE NC GND OUT
NC/VCXO M3V 6P - 27MHz xtal_s6p
CB48 0402r NC/0.1uF
R85 NC/51 0402r
VCXO
C27 NC/22pF 0402c
NC
R86 10K R568 0 OSDA0 SIF_SDA C242 NC/22pF
R87 10K R569 0 OSCL0 SIF_SCL C243 NC/22pF
+3V3SB R89 10K
OPCTRL1 10K R92 R93 NS/10K
Q8 2N3904-SOT23
IIC ADRESS "A0"
R91 33 SIF_SCL SIF_SDA
U27 VCC WP SCL SDA NC NC NC GND
EEPROM 24C16 sop8
CB50 0.1uF 0402c
SYSTEM EEPROM
R88 820K 0402r
Y1 60MHz xtal_dip
OXTALI OXTALO
C29 5pF 0402c
C30 5pF 0402c
L18 820nH 0805l
C31 1nF 0402c
L17 80ohm/0805 AVCC_SRV C28 1uF CB49 0.1uF 0402c AVSS_SRV
L19 80ohm/0805 XREGVDD C32 1uF CB51 0.1uF 0402c XREGVSS
L20 80ohm/0805 AVCC_XTAL C33 1uF CB52 0.1uF 0402c
+CE69 NS/10uF/16V
R377 NS/10K
R379 NS/10K
Q31 NS/2N3904
D100 NS/1N4148
R380 NS/47K
nORESET
SW1 ORESET SW_DIP4
R378 4.7K
U38 OUT IN ADJ/GND STL8110GCL438
+5VSB R376 47
C194 0.1uF
R381 10K
CB97 10nF
Reset

APPROVED BY:	**AmTRAN** TECHNOLOGY		
	MODEL	VW46L FHDTV10A (3646-0082-0150) AUO	
CHECKED BY:	CIRCUITY	MT5382PERIPHERAL	
	PCB P/ N: 0171-2272-2434	ECN NO:	VPCN07110004
	SCH FILE : 364600820150_VPCN07110004.DSN	SCH REV:	04
DESING BY:	PCB FILE : 017122722434.BRD	PCB REV:	04
	DATE: Wednesday, November 21, 2007	Sheet:	5 of 15



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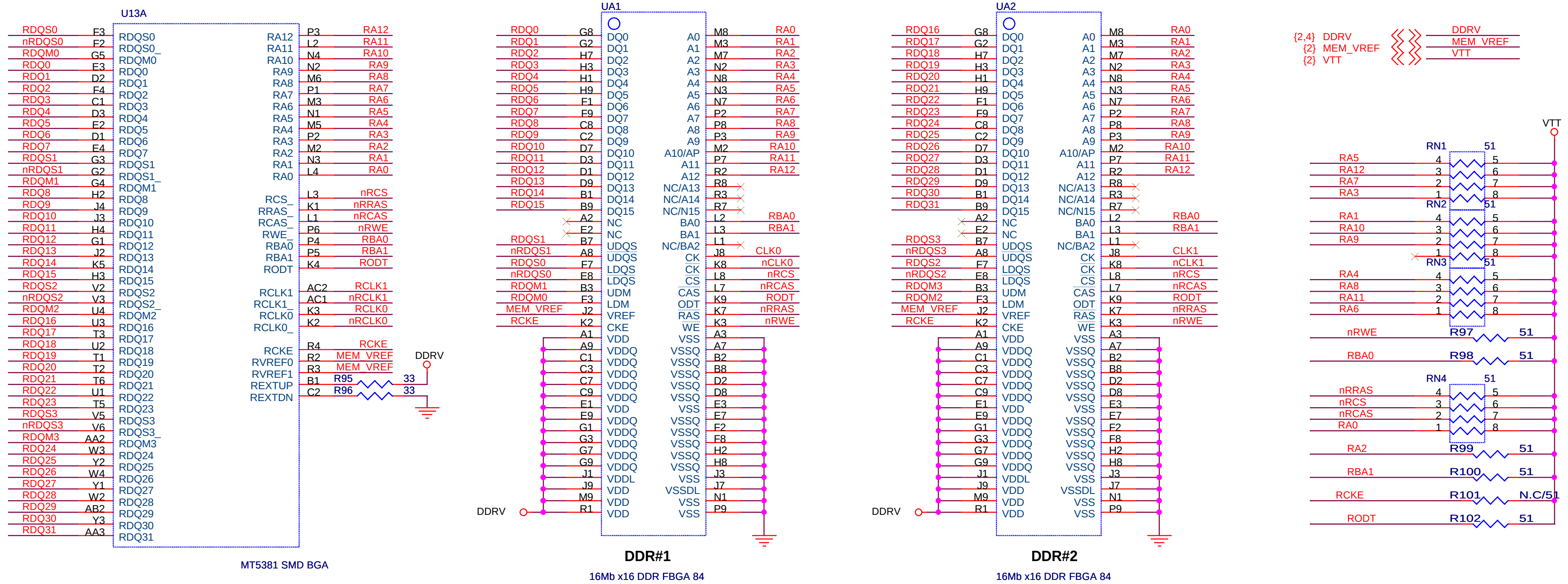
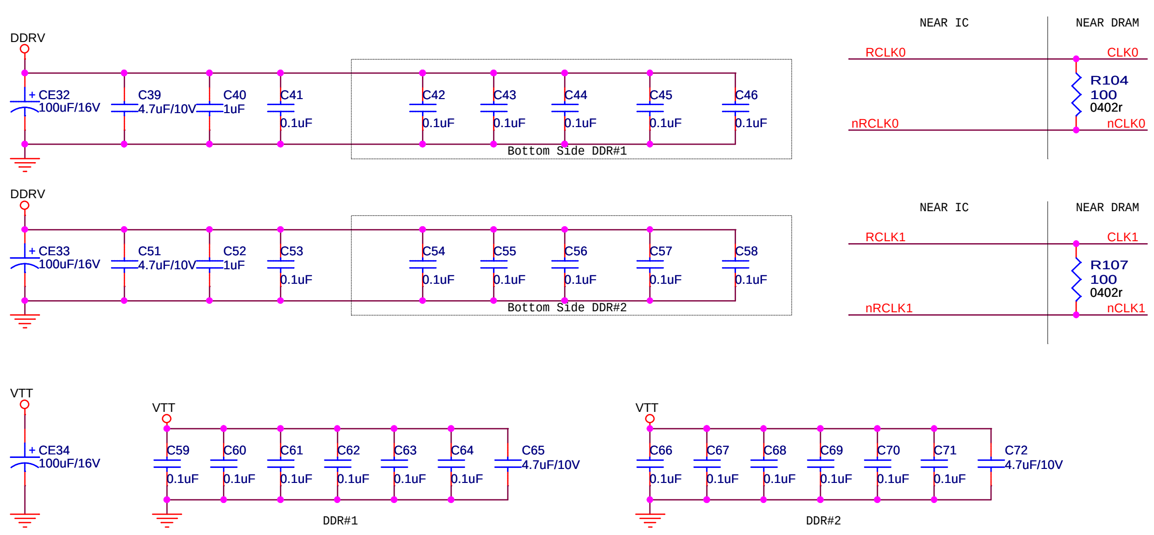
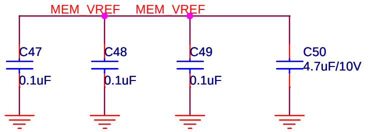
ALL CAPACITOR VALUES IN uF UNLESS NOTED.
ALL RESISTORS 25 VOLT IN .1uF UNLESS NOTED.
M= METAL 1%

APPROVED BY:	AmTRAN TECHNOLOGY			
	MODEL	VW46L FHDTV10A (3646-0082-0150) AUO		
CHECKED BY:	CIRCUITY	ANALOG PLL / USB2.0		
	PCB P/ N:	0171-2272-2434	ECN NO:	VPCN07110004
	SCH FILE :	364600820150_VPCN07110004.DSN	SCH REV:	04
DESING BY:	PCB FILE :	017122722434.BRD	PCB REV:	04
	DATE:	Wednesday, November 21, 2007	Sheet:	6 of 15







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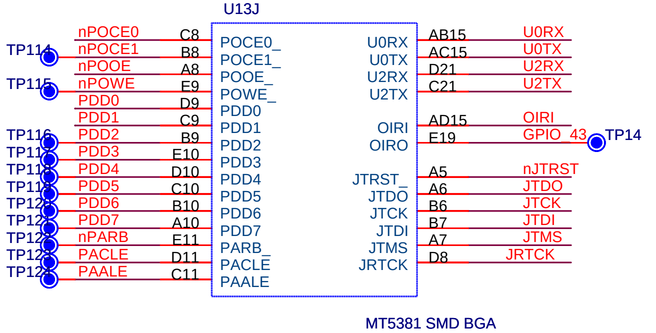
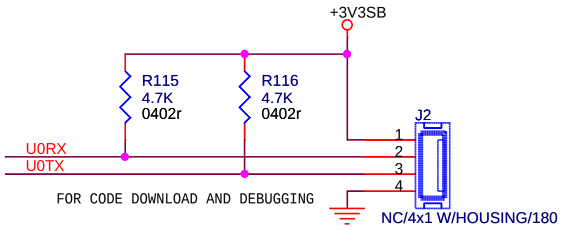
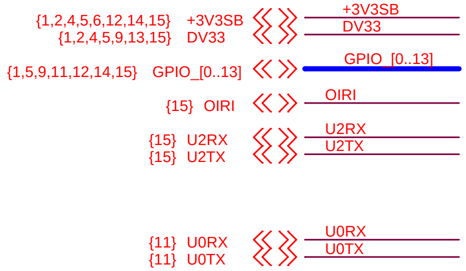
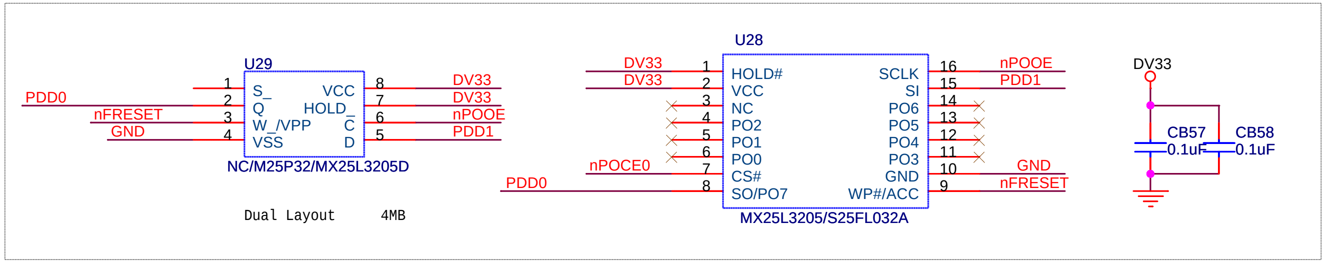
ALL RESISTORS VALUES IN OHMS UNLESS NOTED.
ALL CAPACITORS 50 VOLT & 105"C UNLESS NOTED.
ALL CAPACITOR VALUES IN uF UNLESS NOTED.
ALL RESISTORS 25 VOLT IN .1uF UNLESS NOTED.
M= METAL 1%

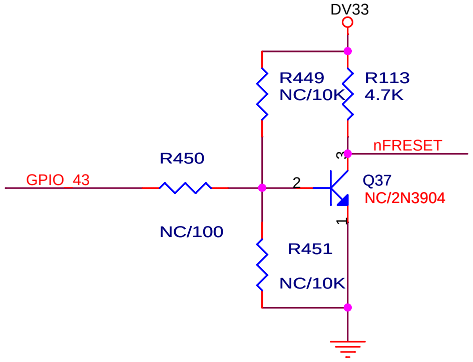
APPROVED BY:	**AmTRAN** TECHNOLOGY			
	MODEL	VW46L FHDTV10A (3646-0082-0150) AUO		
CHECKED BY:	CIRCUITY	DDR2 MEMORY		
	PCB P/ N:	0171-2272-2434	ECN NO:	VPCN07110004
DESING BY:	SCH FILE :	364600820150_VPCN07110004.DSN	SCH REV:	04
	PCB FILE :	017122722434.BRD	PCB REV:	04
	DATE:	Wednesday, November 21, 2007	Sheet:	7 of 15

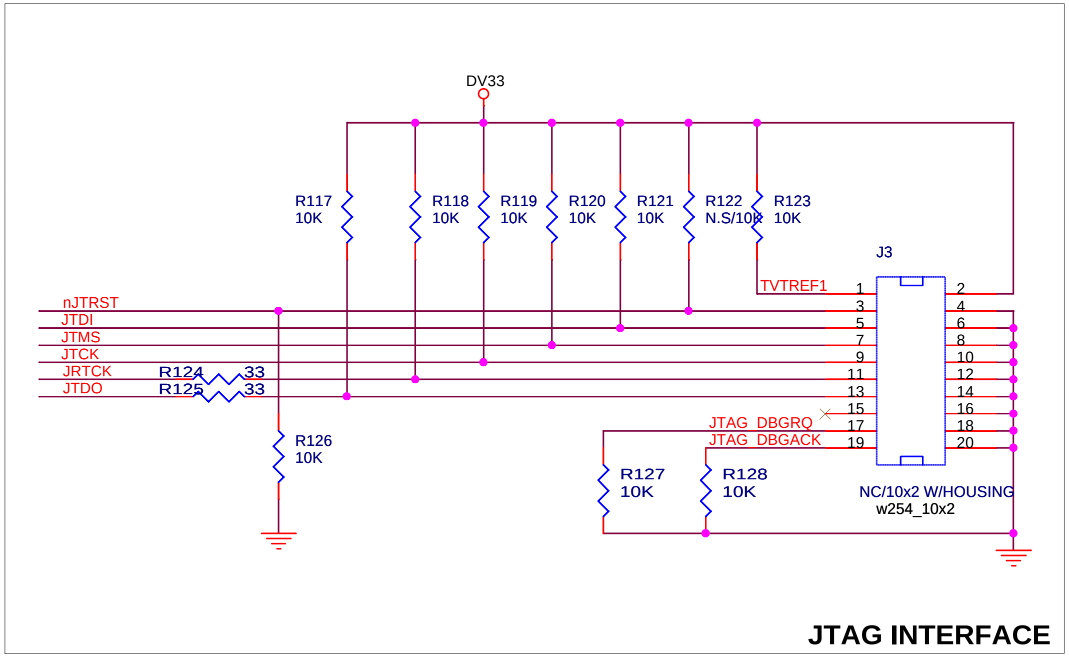




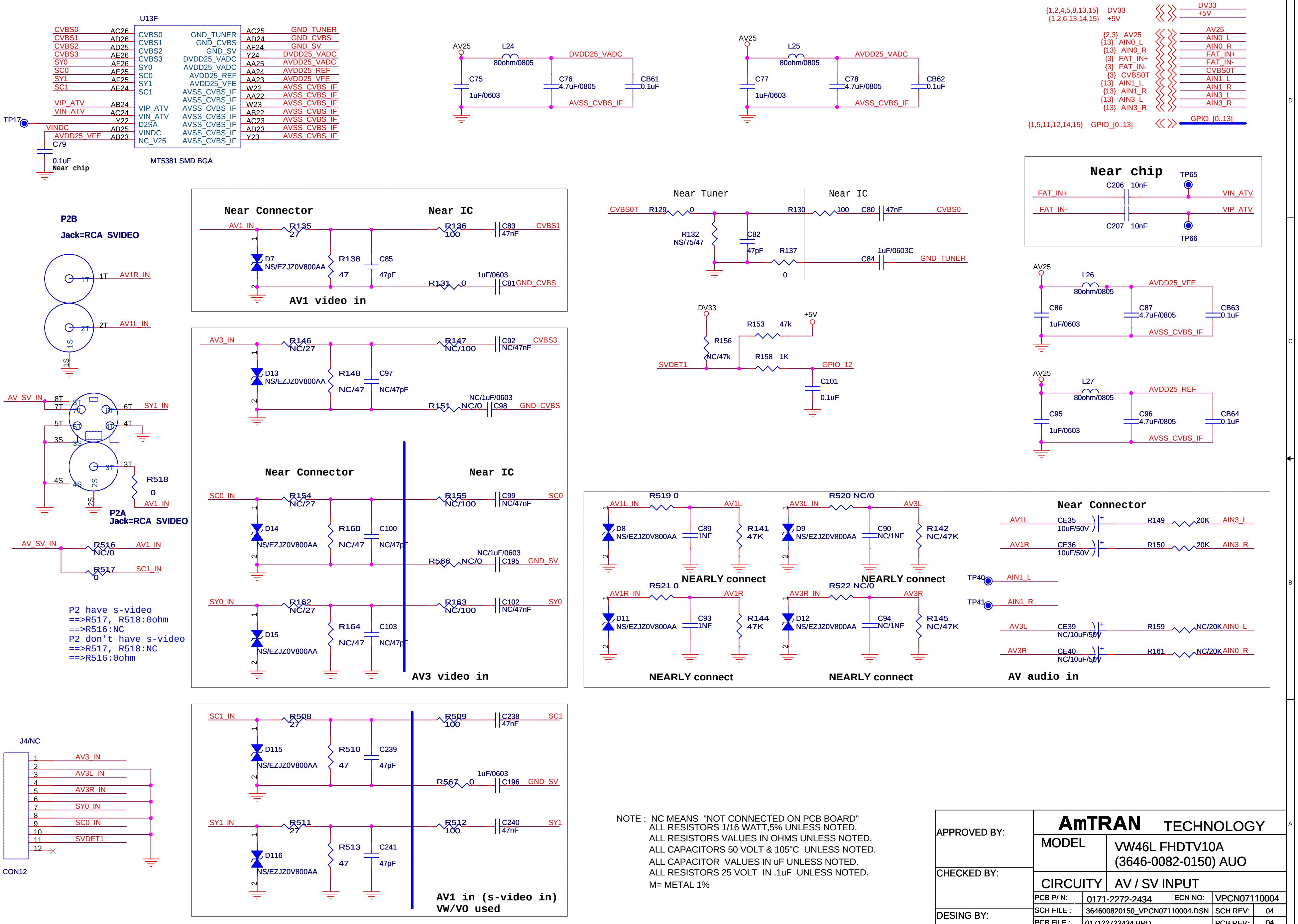








APPROVED BY:	**AmTRAN** TECHNOLOGY				
	MODEL	VW46L FHDTV10A (3646-0082-0150) AUO			
CHECKED BY:	CIRCUITY	FLASH/JTAG/UART			
	PCB P/ N:	0171-2272-2434	ECN NO:	VPCN07110004	
	SCH FILE :	364600820150_VPCN07110004.DSN	SCH REV:	04	
DESING BY:	PCB FILE :	017122722434.BRD	PCB REV:	04	
	DATE:	Wednesday, November 21, 2007	Sheet:	8 of 15	



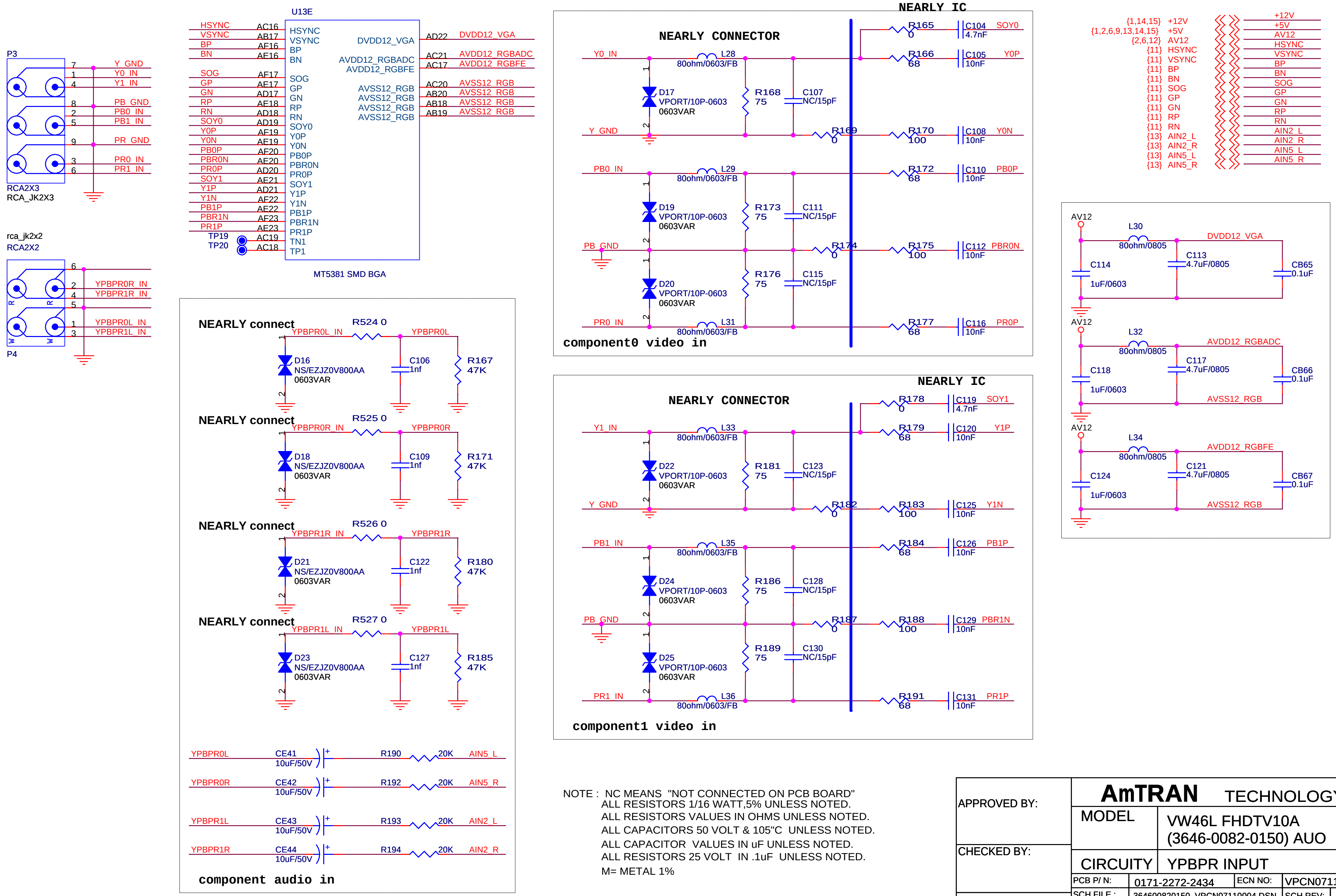
P2 have s-video
==>R517, R518:0ohm
==>R516:NC
P2 don't have s-video
==>R517, R518:NC
==>R516:0ohm

NOTE : NC MEANS "NOT CONNECTED ON PCB BOARD"
ALL RESISTORS 1/16 WATT,5% UNLESS NOTED.
ALL RESISTORS VALUES IN OHMS UNLESS NOTED.
ALL CAPACITORS 50 VOLT & 105"C UNLESS NOTED.
ALL CAPACITOR VALUES IN uF UNLESS NOTED.
ALL RESISTORS 25 VOLT IN .1uF UNLESS NOTED.
M= METAL 1%

APPROVED BY:
CHECKED BY:
DESING BY:

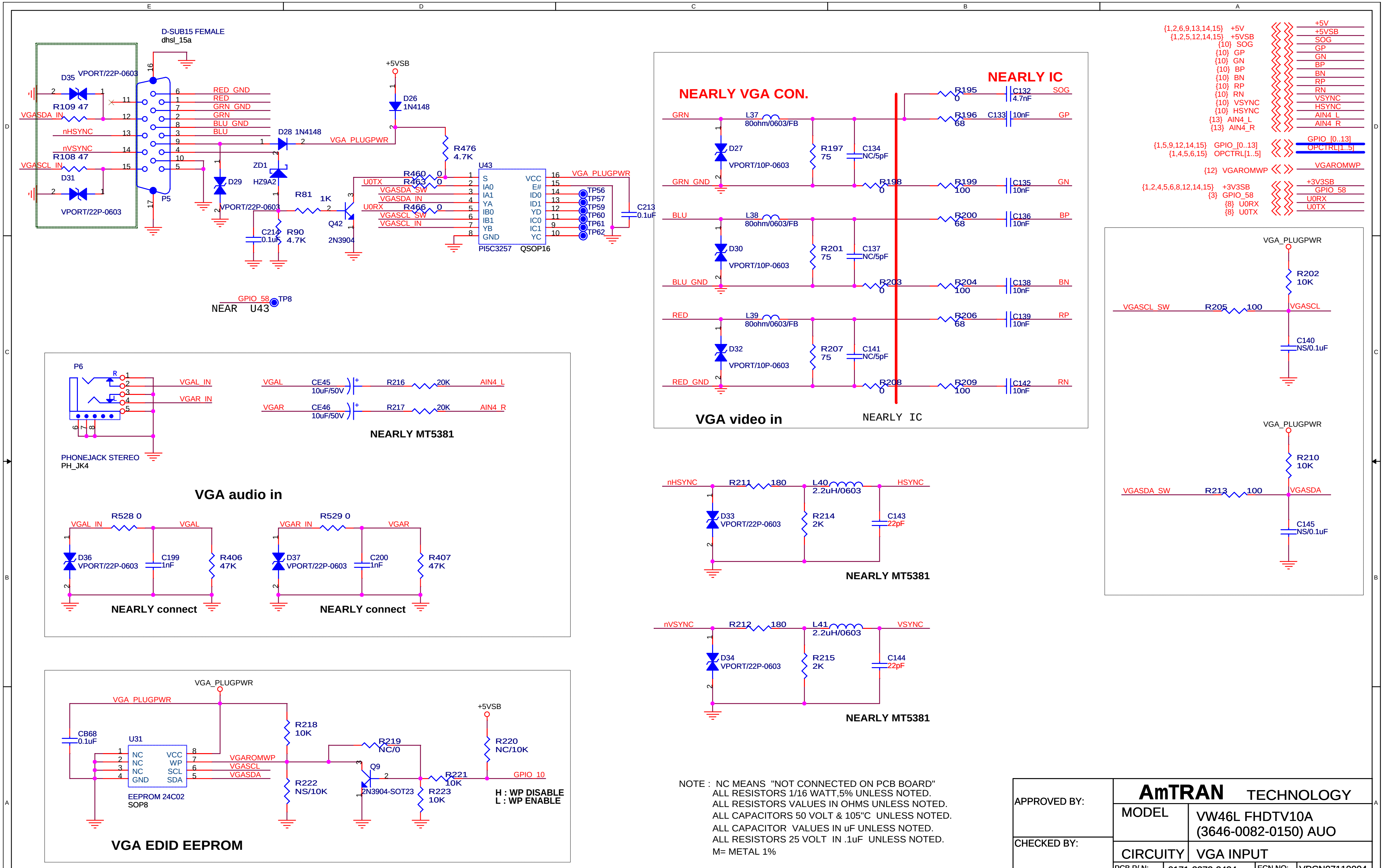
AmTRAN TECHNOLOGY

MODEL: VW46L FHDTV10A (3646-0082-0150) AUO
CIRCUITY: AV / SV INPUT
PCB P/N: 0171-2272-2434
ECN NO: VPCN07110004
SCH FILE : 364600820150_VPCN07110004.DSN
SCH REV: 04
PCB FILE : 0171227722434.BRD
PCB REV: 04
DATE: Wednesday, November 21, 2007
Sheet: 9 of 15



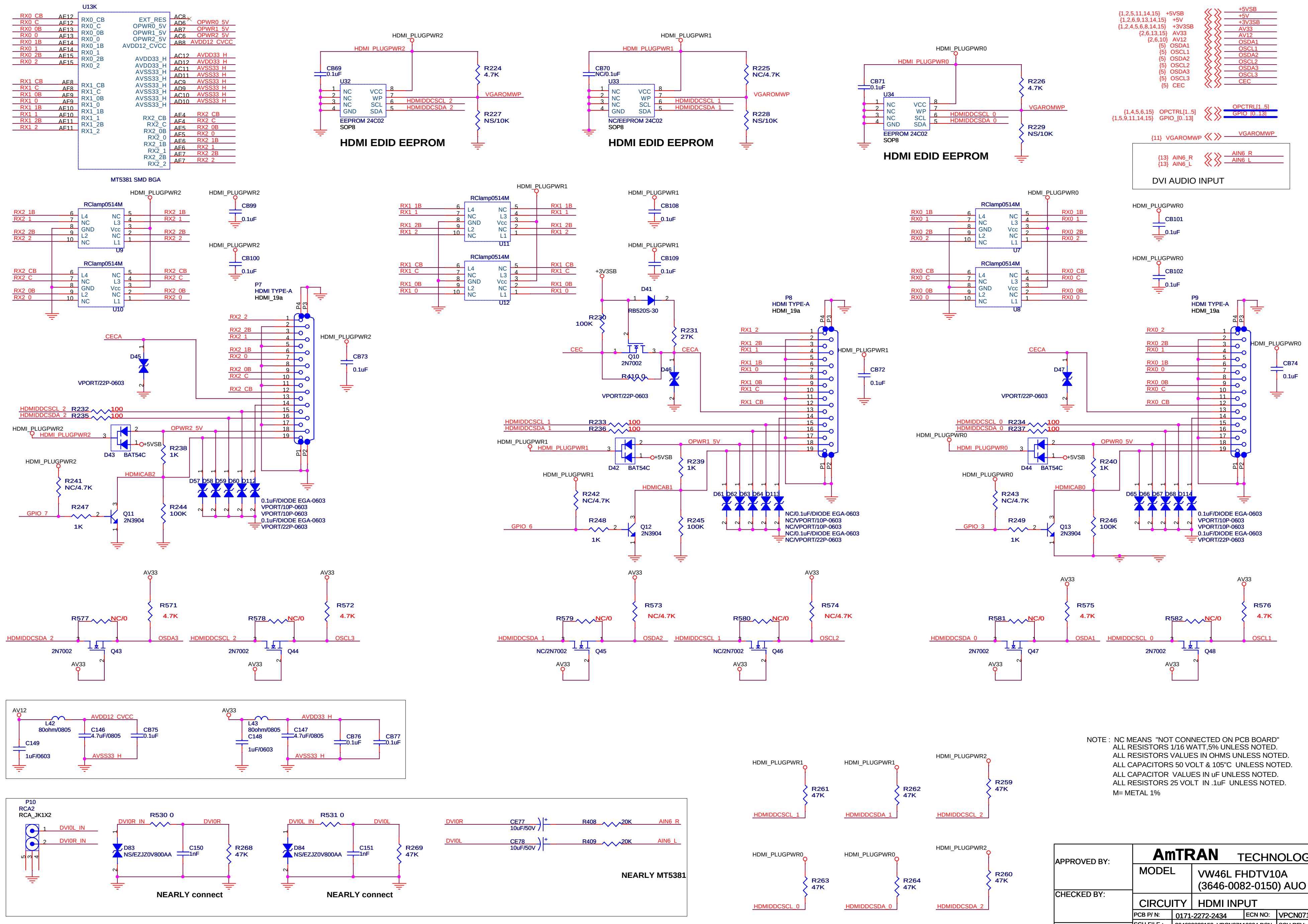
NOTE : NC MEANS "NOT CONNECTED ON PCB BOARD"
ALL RESISTORS 1/16 WATT,5% UNLESS NOTED.
ALL RESISTORS VALUES IN OHMS UNLESS NOTED.
ALL CAPACITORS 50 VOLT & 105°C UNLESS NOTED.
ALL CAPACITOR VALUES IN uF UNLESS NOTED.
ALL RESISTORS 25 VOLT IN .1uF UNLESS NOTED.
M= METAL 1%

APPROVED BY:	**AmTRAN** TECHNOLOGY			
	MODEL	VW46L FHDTV10A (3646-0082-0150) AUO		
CHECKED BY:	CIRCUITY	YPBPR INPUT		
	PCB P/N:	0171-2272-2434	ECN NO:	VPCN07110004
	SCH FILE :	364600820150_VPCN07110004.DSN	SCH REV:	04
DESING BY:	PCB FILE :	017122722434.BRD	PCB REV:	04
	DATE:	Wednesday, November 21, 2007	Sheet:	10 of 15



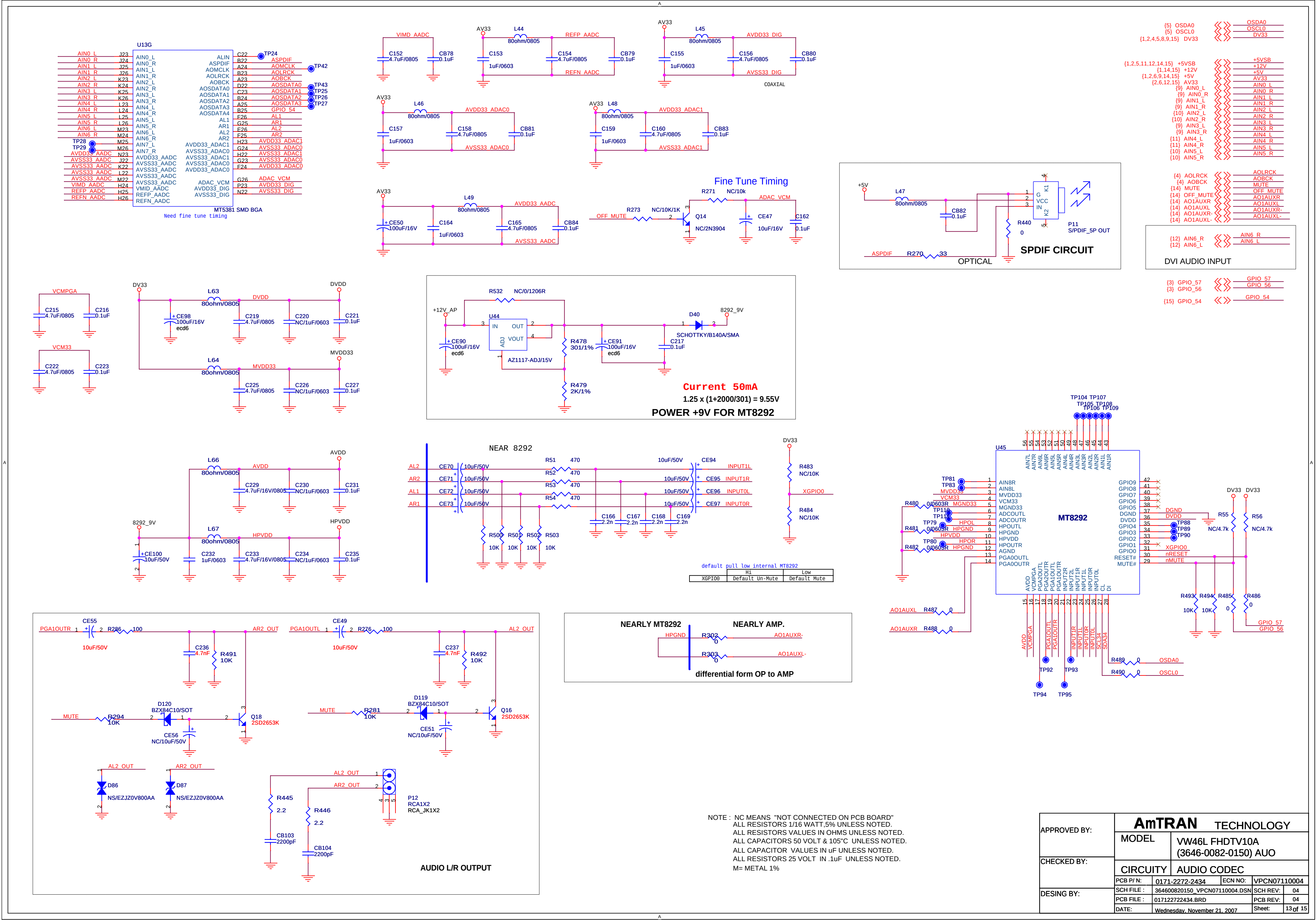
NOTE : NC MEANS "NOT CONNECTED ON PCB BOARD"
ALL RESISTORS 1/16 WATT,5% UNLESS NOTED.
ALL RESISTORS VALUES IN OHMS UNLESS NOTED.
ALL CAPACITORS 50 VOLT & 105"C UNLESS NOTED.
ALL CAPACITOR VALUES IN uF UNLESS NOTED.
ALL RESISTORS 25 VOLT IN .1uF UNLESS NOTED.
M= METAL 1%

APPROVED BY:	**AmTRAN** TECHNOLOGY		
	MODEL	VW46L FHDTV10A (3646-0082-0150) AUO	
CHECKED BY:	CIRCUITY	VGA INPUT	
	PCB P/ N:	0171-2272-2434	ECN NO: VPCN07110004
	SCH FILE :	364600820150_VPCN07110004.DSN	SCH REV: 04
DESING BY:	PCB FILE :	017122722434.BRD	PCB REV: 04
	DATE:	Wednesday, November 21, 2007	Sheet: 11 of 15



NOTE : NC MEANS "NOT CONNECTED ON PCB BOARD"
ALL RESISTORS 1/16 WATT,5% UNLESS NOTED.
ALL RESISTORS VALUES IN OHMS UNLESS NOTED.
ALL CAPACITORS 50 VOLT & 105"C UNLESS NOTED.
ALL CAPACITOR VALUES IN uF UNLESS NOTED.
ALL RESISTORS 25 VOLT IN .1uF UNLESS NOTED.
M= METAL 1%

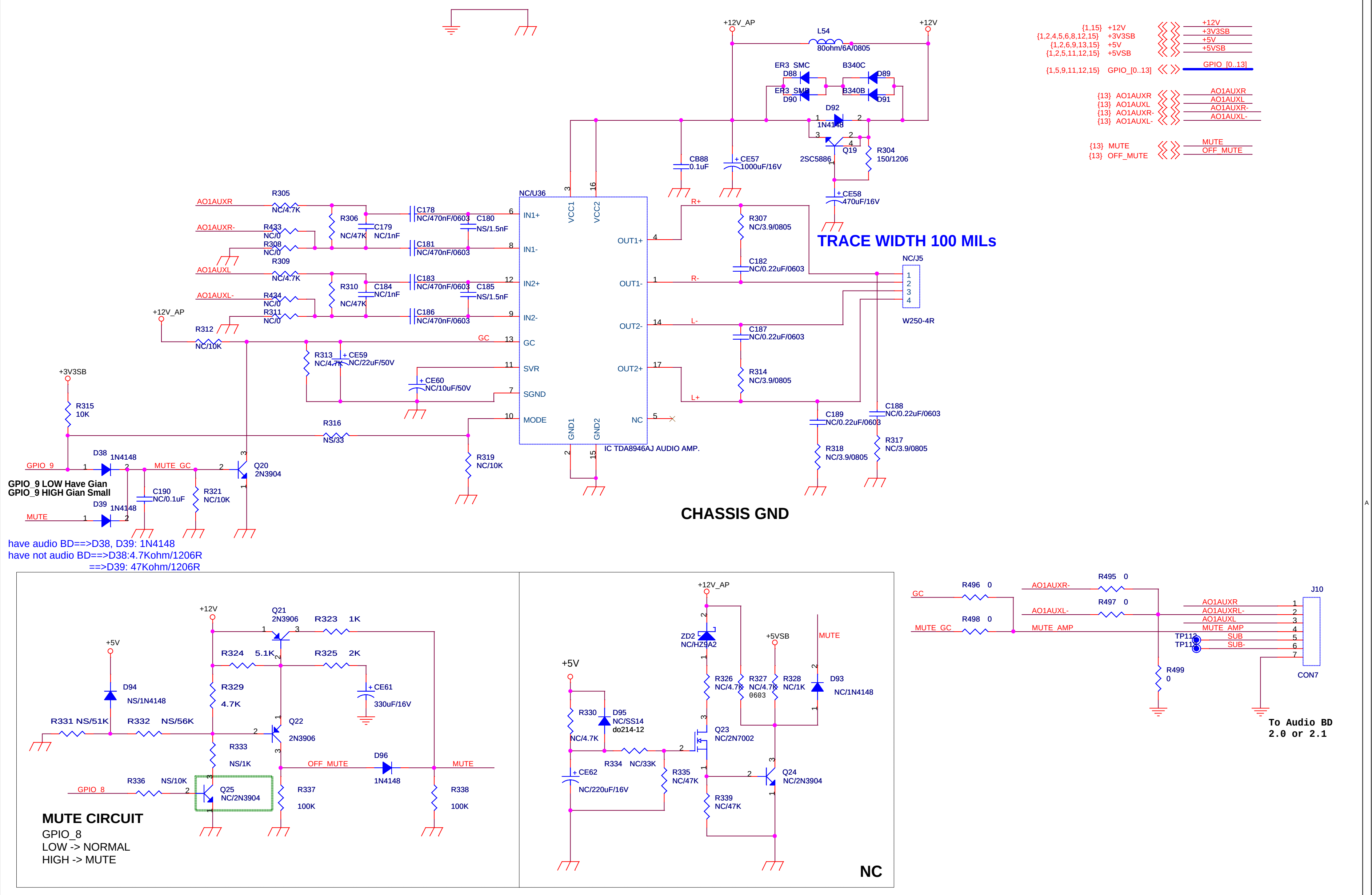
APPROVED BY:	**AmTRAN** TECHNOLOGY		
	MODEL	VW46L FHDTV10A (3646-0082-0150) AUO	
CHECKED BY:	CIRCUITY	HDMI INPUT	
	PCB P/ N: 0171-2272-2434	ECN NO:	VPCN07110004
DESING BY:	SCH FILE : 364600820150_VPCN07110004.DSN	SCH REV:	04
	PCB FILE : 017122722434.BRD	PCB REV:	04
	DATE: Wednesday, November 21, 2007	Sheet:	12 of 15



XGPIO0	Hi	Low
	Default Un-Mute	Default Mute

NOTE : NC MEANS "NOT CONNECTED ON PCB BOARD"
ALL RESISTORS 1/16 WATT,5% UNLESS NOTED.
ALL RESISTORS VALUES IN OHMS UNLESS NOTED.
ALL CAPACITORS 50 VOLT & 105°C UNLESS NOTED.
ALL CAPACITOR VALUES IN uF UNLESS NOTED.
ALL RESISTORS 25 VOLT IN .1uF UNLESS NOTED.
M= METAL 1%

APPROVED BY:	**AmTRAN** TECHNOLOGY				
	MODEL	VW46L FHDTV10A (3646-0082-0150) AUO			
CHECKED BY:	CIRCUITY	AUDIO CODEC			
	PCB P/ N:	0171-2272-2434	ECN NO:	VPCN07110004	
DESING BY:	SCH FILE :	364600820150_VPCN07110004.DSN	SCH REV:	04	
	PCB FILE :	017122722434.BRD	PCB REV:	04	
	DATE:	Wednesday, November 21, 2007	Sheet:	13 of 15	



NOTE : NC MEANS "NOT CONNECTED ON PCB BOARD"
ALL RESISTORS 1/16 WATT,5% UNLESS NOTED.
ALL RESISTORS VALUES IN OHMS UNLESS NOTED.
ALL CAPACITORS 50 VOLT & 105"C UNLESS NOTED.
ALL CAPACITOR VALUES IN uF UNLESS NOTED.
ALL RESISTORS 25 VOLT IN .1uF UNLESS NOTED.
M= METAL 1%

APPROVED BY:

CHECKED BY:

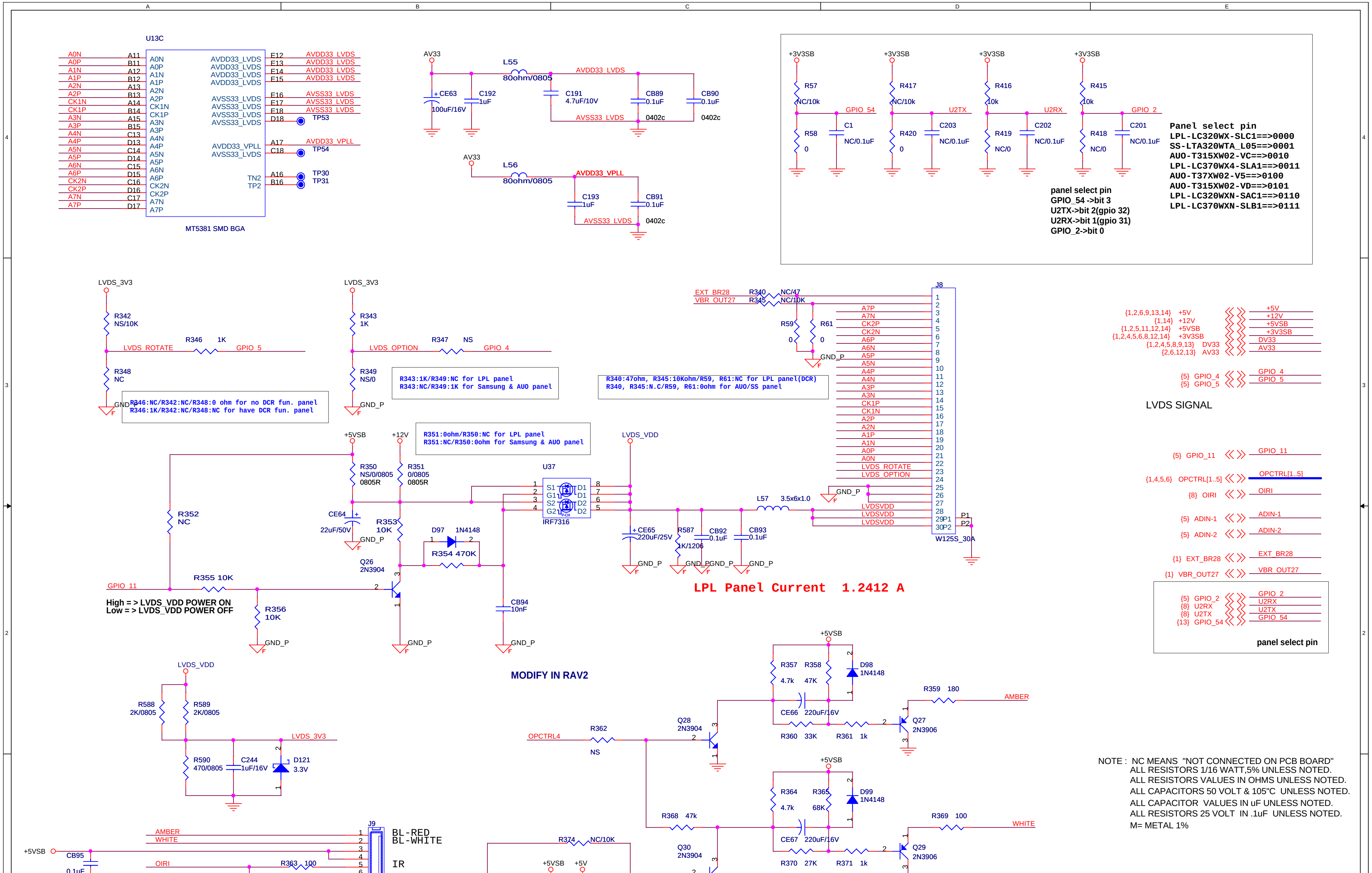
DESING BY:

AmTRAN TECHNOLOGY

MODEL VW46L FHDTV10A
(3646-0082-0150) AUO

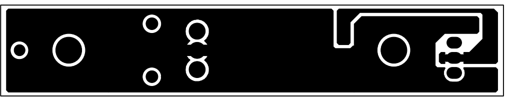
CIRCUITY AUDIO AMP. - SPEAKER

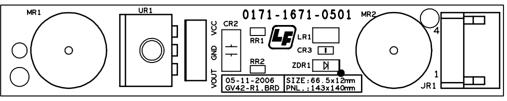
PCB P/N:	0171-2272-2434	ECN NO:	VPCN07110004
SCH FILE :	364600820150_VPCN07110004.DSN	SCH REV:	04
PCB FILE :	017122722434.BRD	PCB REV:	04
DATE:	Wednesday, November 21, 2007	Sheet:	14 of 15

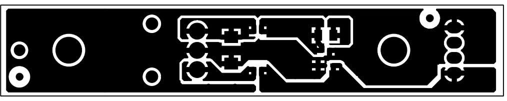


NOTE : NC MEANS "NOT CONNECTED ON PCB BOARD"
ALL RESISTORS 1/16 WATT,5% UNLESS NOTED.
ALL RESISTORS VALUES IN OHMS UNLESS NOTED.
ALL CAPACITORS 50 VOLT & 105"C UNLESS NOTED.
ALL CAPACITOR VALUES IN uF UNLESS NOTED.
ALL RESISTORS 25 VOLT IN .1uF UNLESS NOTED.
M= METAL 1%

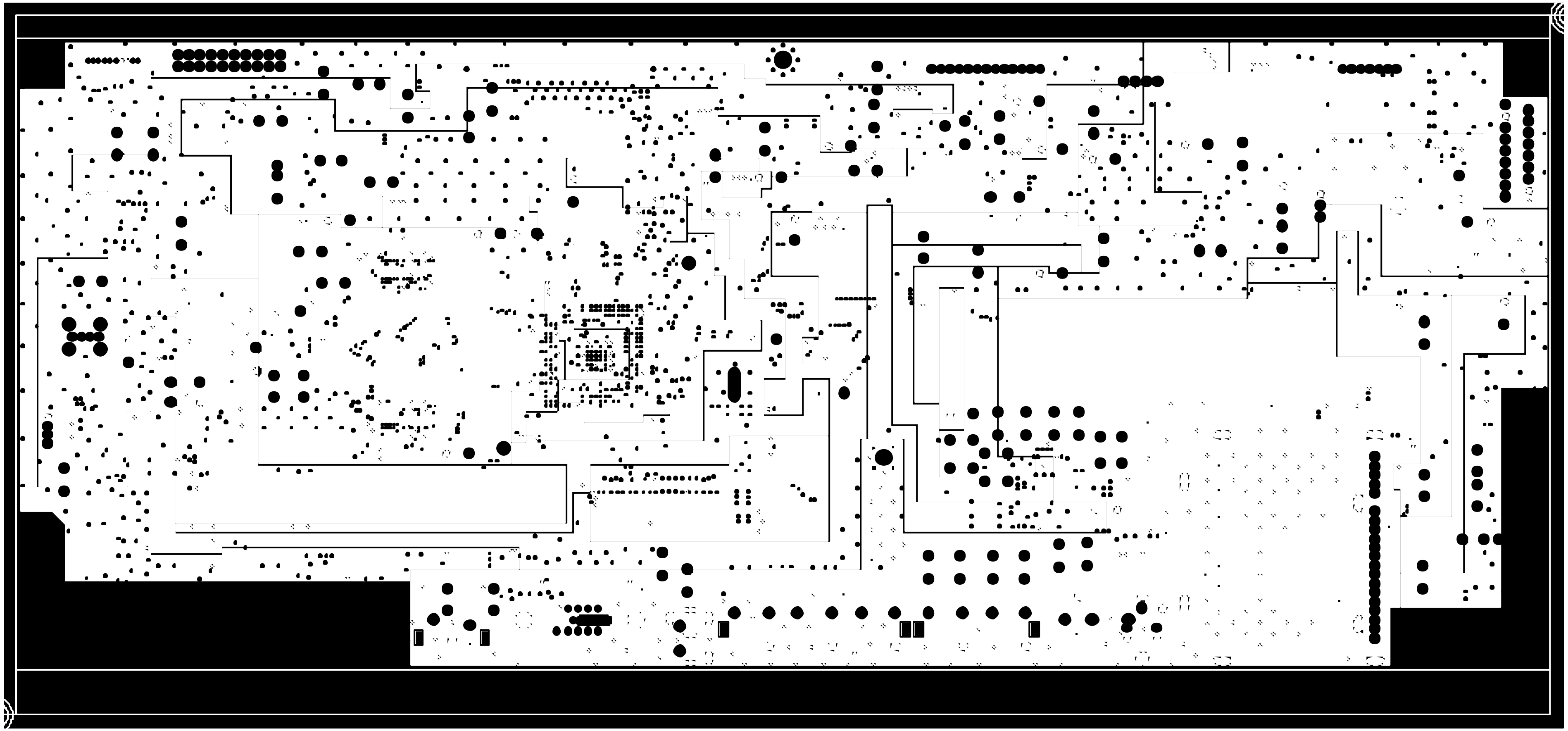
APPROVED BY:	**AmTRAN** TECHNOLOGY			
	MODEL	VW46L FHDTV10A (3646-0082-0150) AUO		
CHECKED BY:	CIRCUITY	LVDS / Keypad IO		
	PCB P/ N:	0171-2272-2434	ECN NO:	VPCN07110004
	SCH FILE :	364600820150_VPCN07110004.DSN	SCH REV:	04
DESING BY:	PCB FILE :	017122722434.BRD	PCB REV:	04
	DATE:	Wednesday, November 21, 2007	Sheet:	15 of 15




MR1
UR1
VCC
GND
VOUT
CR2
RR1
RR2
0171-1671-0501
LR1
CR3
ZDR1
05-11-2006
GV42-R1.BRD
SIZE:66.5x12mm
PNL.:143x140mm
MR2
4
1
JR1

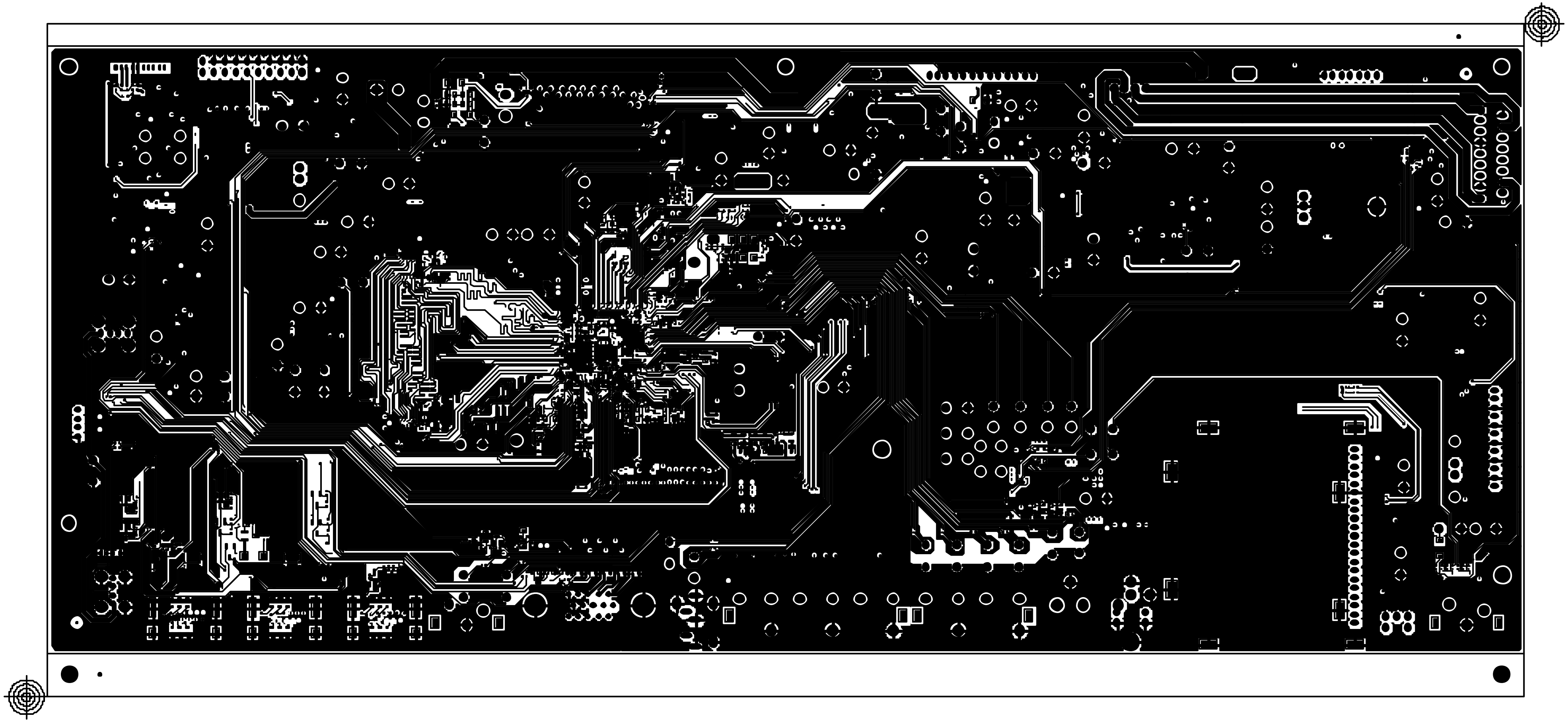


CAM Products 2000(TM): vcc.art

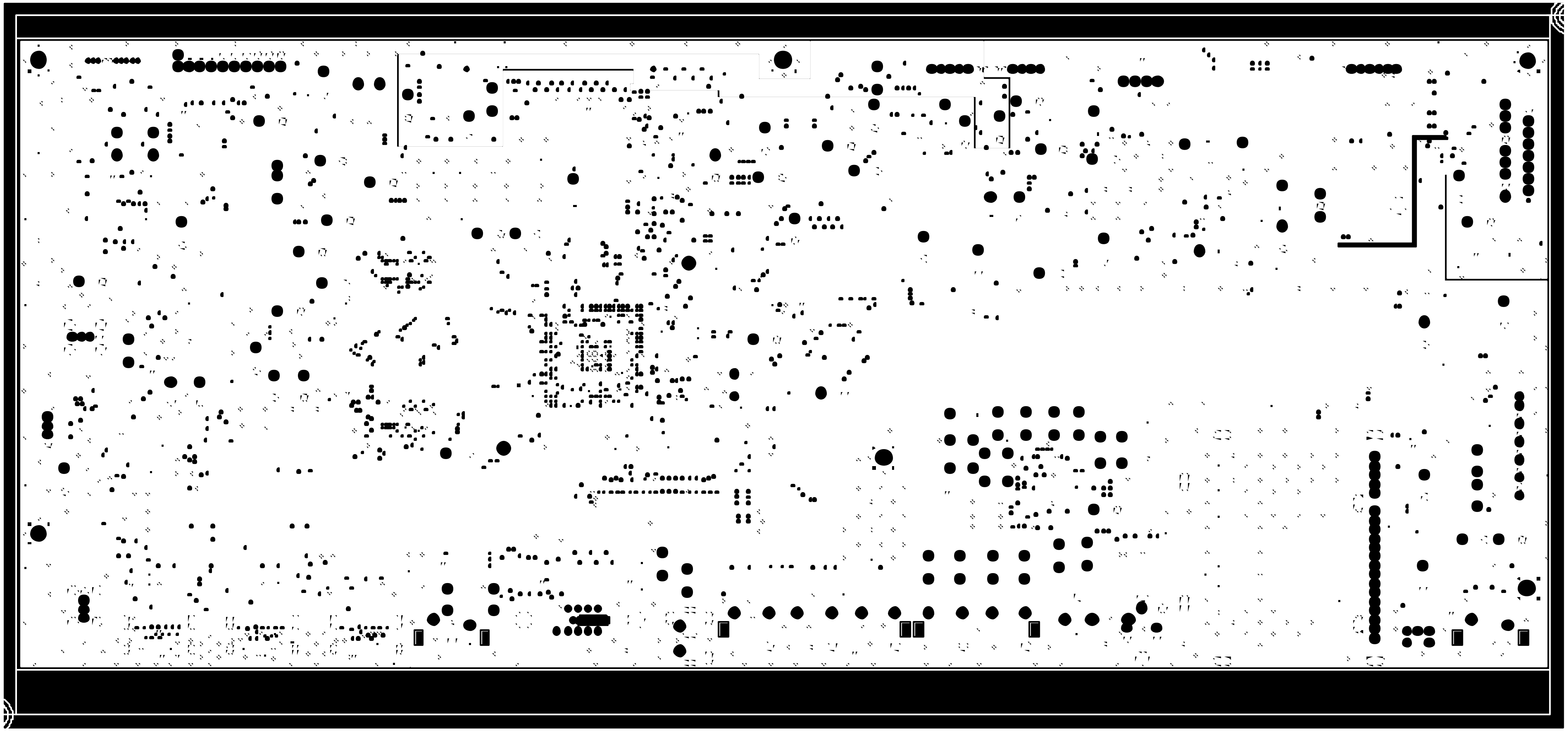


CAM Products 2000(TM): bot.art

AmTRAN Technology
P/N.01T1-2272-2434
01T1227Z2434.BRD
FR4 4L 1 6T
SIZE:340x140mm
PNL :340x155mm
Q'TY:50 PCS
REC :10-26-2007
O.S P S/N Green
Layout by:TAGO

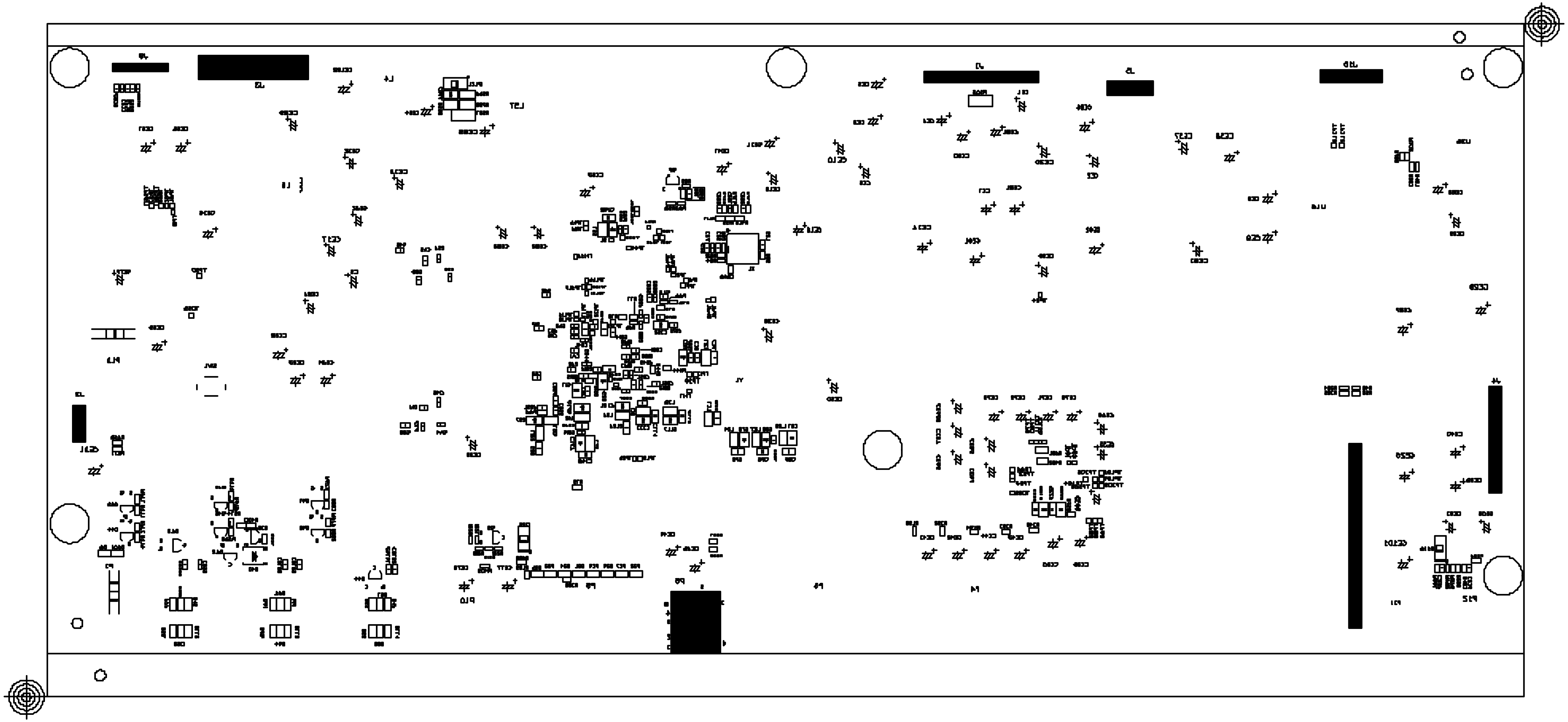


CAM Products 2000(TM): gnd.art



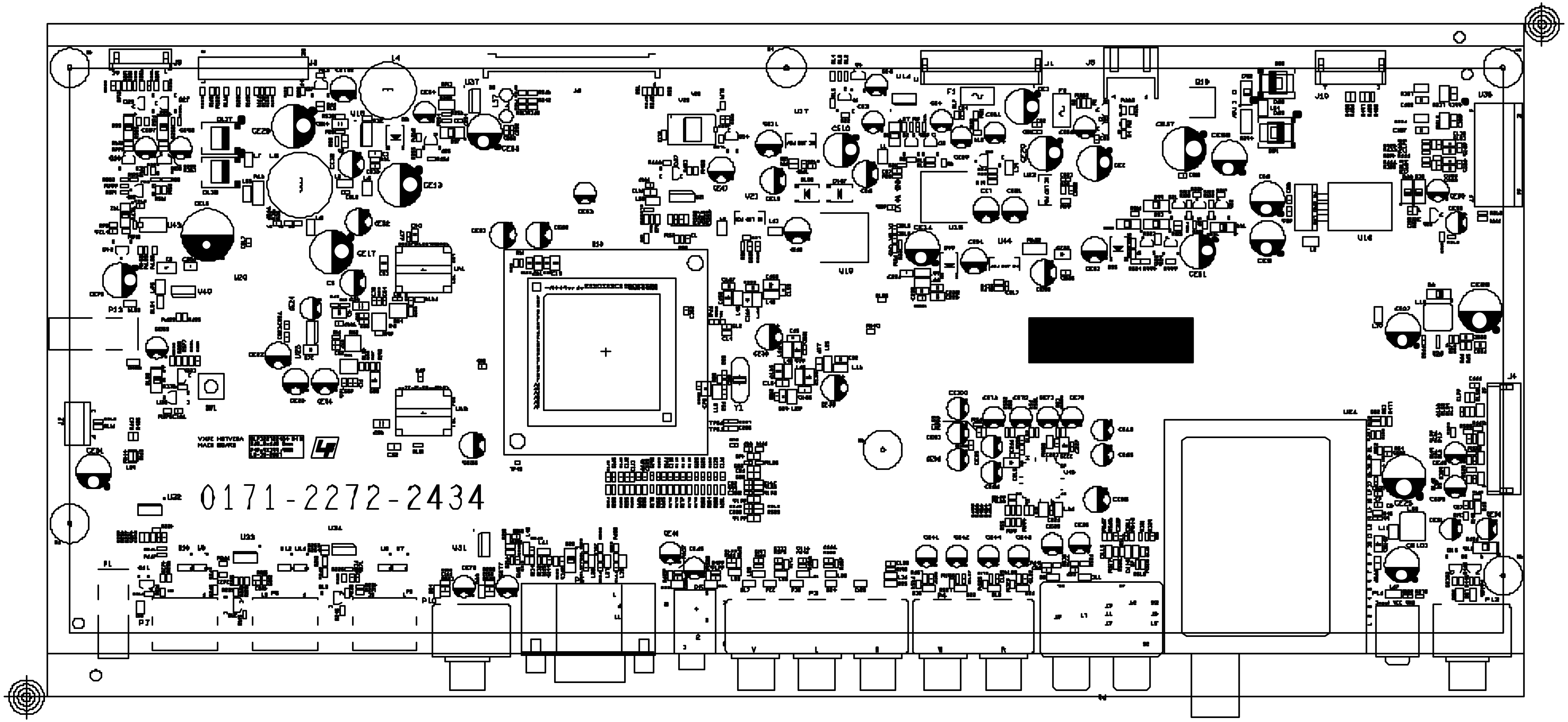
CAM Products 2000(TM): slkbot.art

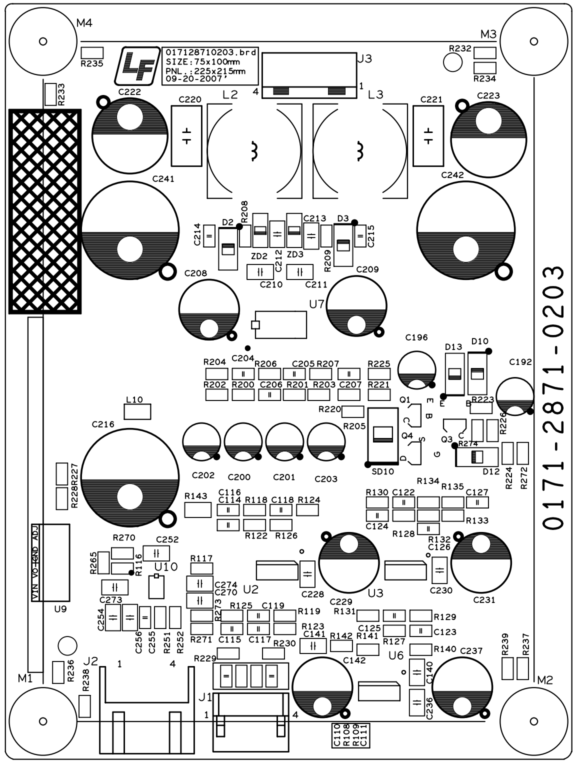
AmTRAN Technology
P/N.0171-2272-2434
017122722434.BRD
FR4 4L 1 6T
SIZE:340x140mm
PNL :340x155mm
Q'TY:50 PCS
REG :10-26-2007
O.S P S/N Green
Layout by:TACO



CAM Products 2000(TM): slktop.art

AmTRAN Technology
P/N.0171-2272-2434
017122722434.BRD
FR4 4L 1 6T
SIZE:340x140mm
PNL :340x155mm
Q'TY:50 PCS
REC :10-26-2007
O.S P S/N Green
Layout by:TAGO




017128710203.brd
SIZE:75x100mm
PNL.:225x215mm
09-20-2007
0171-2871-0203
M4
M3
M2
M1
U3
J3
L2
L3
L10
U7
U9
U10
U2
U6
J1
J2
VIN VO GND ADJ
Q1
Q3
Q4
SD10
D2
D3
D10
D12
D13
ZD2
ZD3
C222
C220
C221
C223
C241
C242
C208
C209
C196
C192
C216
C202
C200
C201
C203
C229
C231
C237
C142
R235
R233
R232
R234
R208
R209
C214
C212
C213
C215
C210
C211
R204
C204
R206
C205
R207
R225
R202
R200
C206
R201
R203
C207
R221
R220
R205
R223
R226
R274
R224
R272
R227
R228
R143
C116
C114
R118
C118
R124
R122
R126
R130
C122
R134
R135
C127
C124
R128
R132
R133
C126
C228
C230
R270
C252
R265
R116
R117
C274
C270
C273
R273
C254
C256
C255
R251
R252
R271
R125
C119
R119
R123
C115
C117
R230
C141
R142
R141
R131
C125
R129
C123
R127
R140
C140
C236
R239
R237
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R238
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R108
R109
C111
1
4
B
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C
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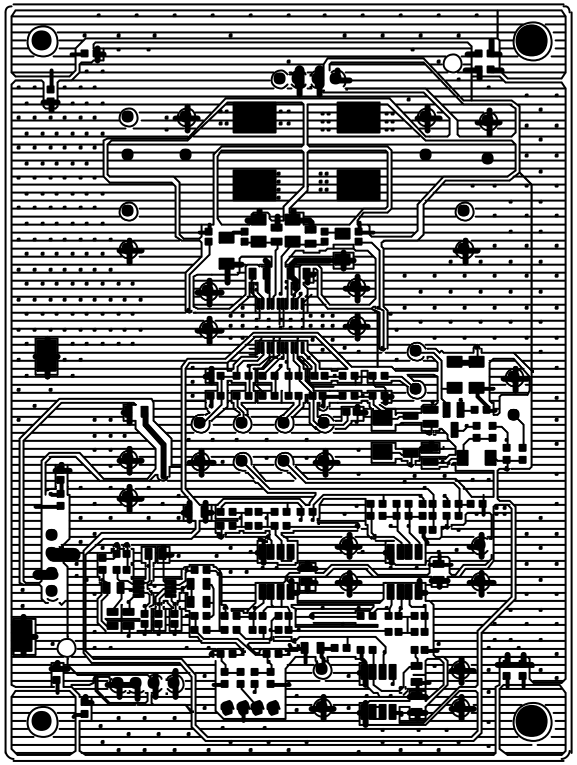
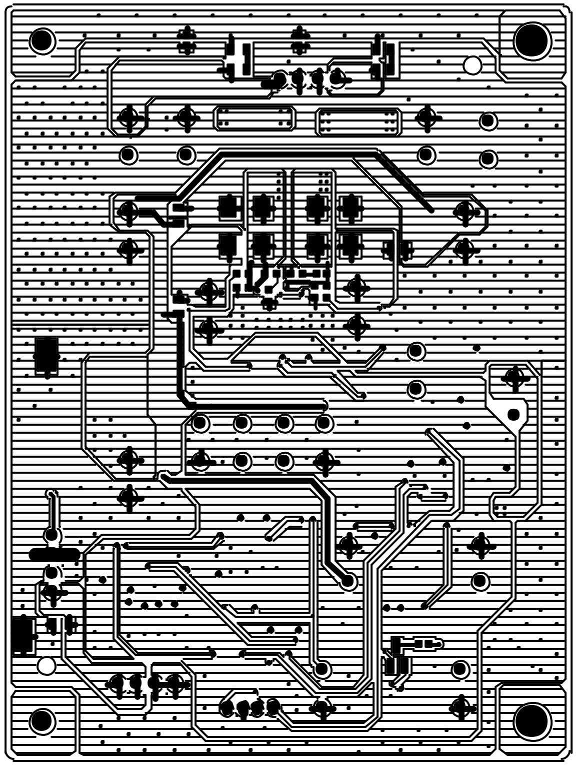
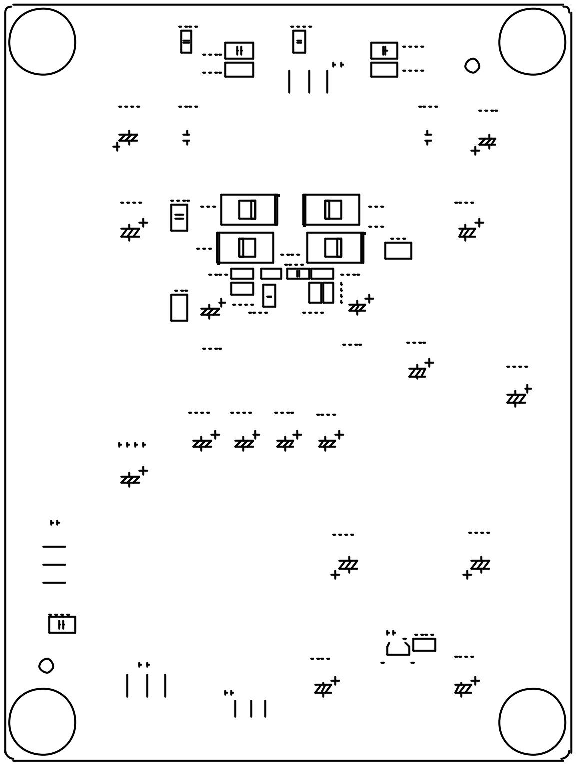
G
D

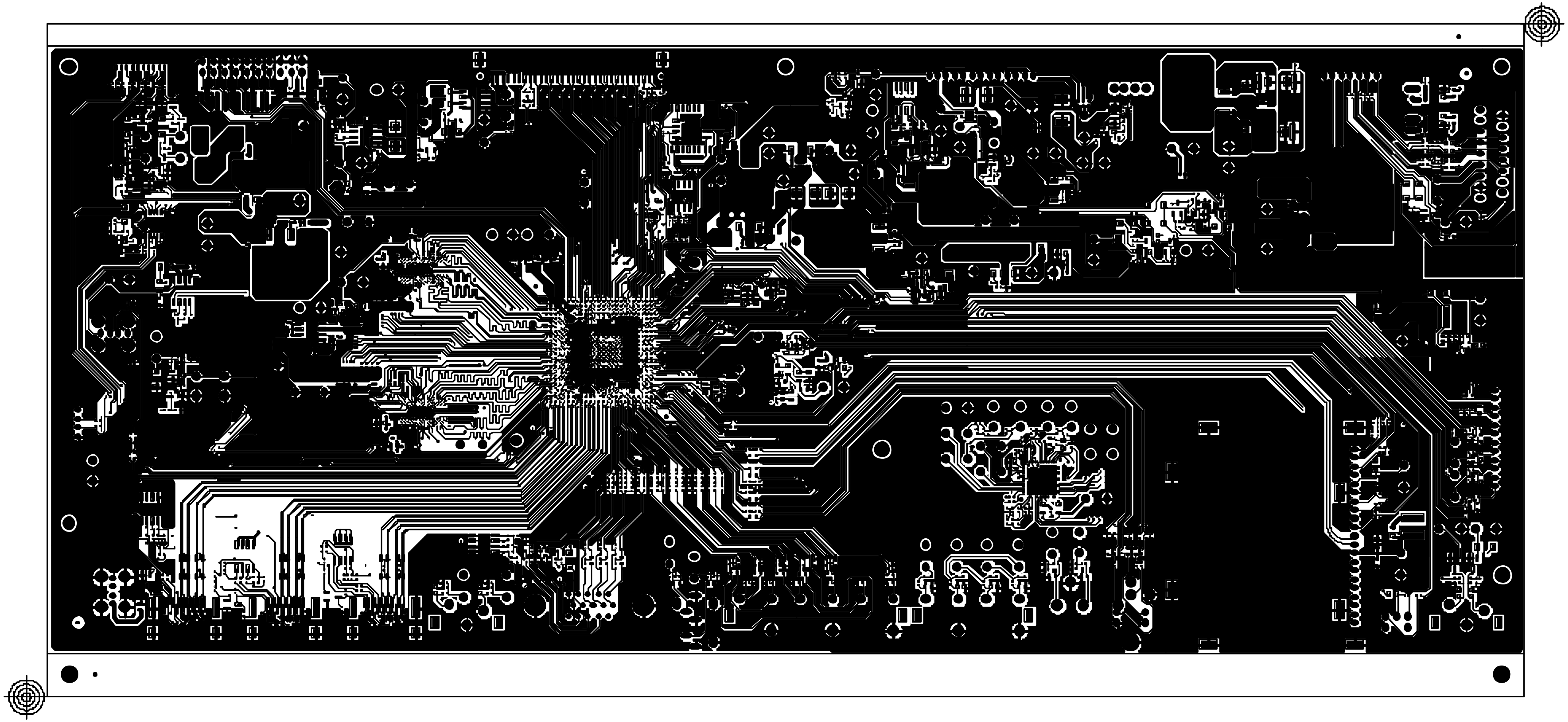






CAM Products 2000(TM): top.art

AmTRAN Technology
P/N.0171-2272-2434
01712272434.BRD
FR4 4L 1 6T
SIZE:340x140mm
PNL :340x155mm
Q'TY:50 PCS
REG :10-26-2007
O.S P S/M Green
Layout by:TAGO



CAM Products 2000(TM):